

BLOCKCHAIN

TECHNOLOGY WORKSHOP

YESTERDAY'S MASTERCLASS:

<http://neuroware.io/Blockchain-MasterClass-Q2-2017.pdf>

presented by



INTRODUCING THE NEUROWARE FOUNDERS



ONLY MSC BLOCKCHAIN COMPANY



SUPPORTED BY MDEC & MOF



Mark Smalley - CEO

Ruben Tan - CTO

Living in Malaysia for the past 20 Years

Building FinTech Applications for 15 Years

Spent 10 Years Building Tech Communities

Building Blockchain Apps for 5 Years

Building Web Applications for 10 Years

Active Community Evangelist & Presenter

Early Developer at MyTeksi and OnApp

Studying Distributed Consensus for 5 Years

DISTRIBUTED CONSENSUS

HOW DO BLOCKCHAINS WORK?

BLOCKCHAINS ARE SIMPLY A NETWORK OF NODES

- Each member of the network runs their own node and all nodes are equal
- The blockchain becomes more secure as more nodes join the network
- All transactions across the entire network are tracked by each node
- There are no actual coins - there is only a ledger of who owns what
- On the blockchain - no one knows you're a fridge

ON THE BLOCKCHAINS EVERY ACCOUNT IS A SET OF KEYS



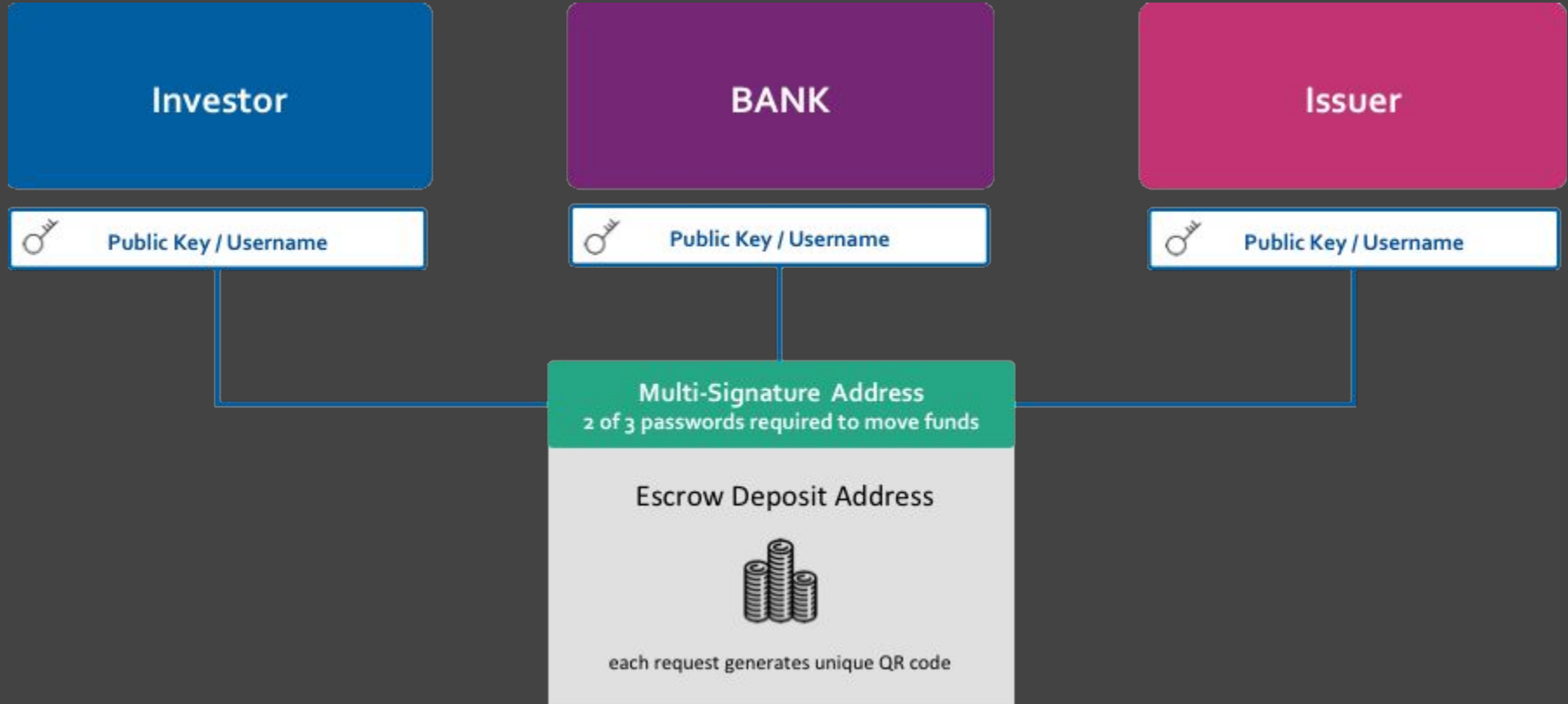
AND EACH “ADDRESS” REQUIRES A PRIVATE KEY TO ACCESS IT



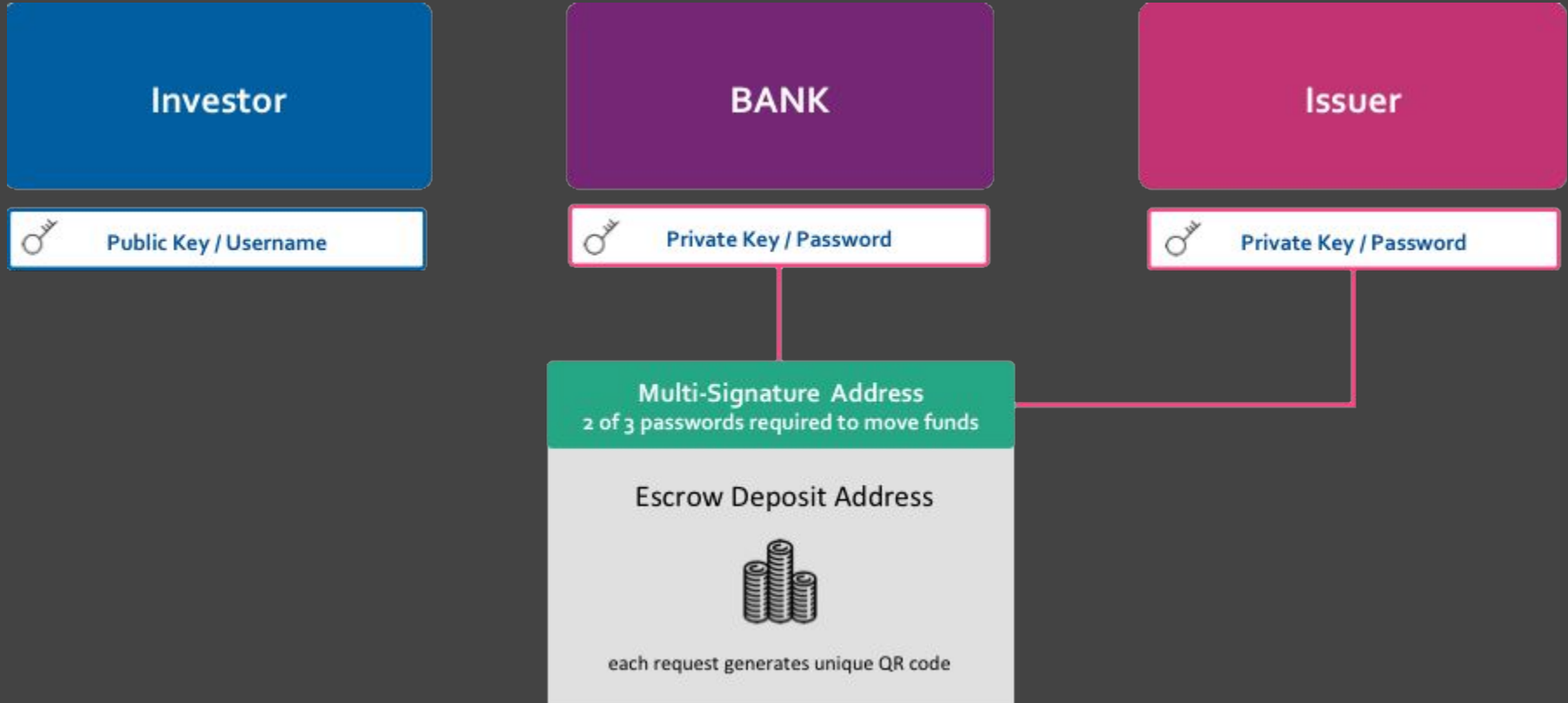
SOME ADDRESSES EVEN REQUIRE MULTIPLE KEYS



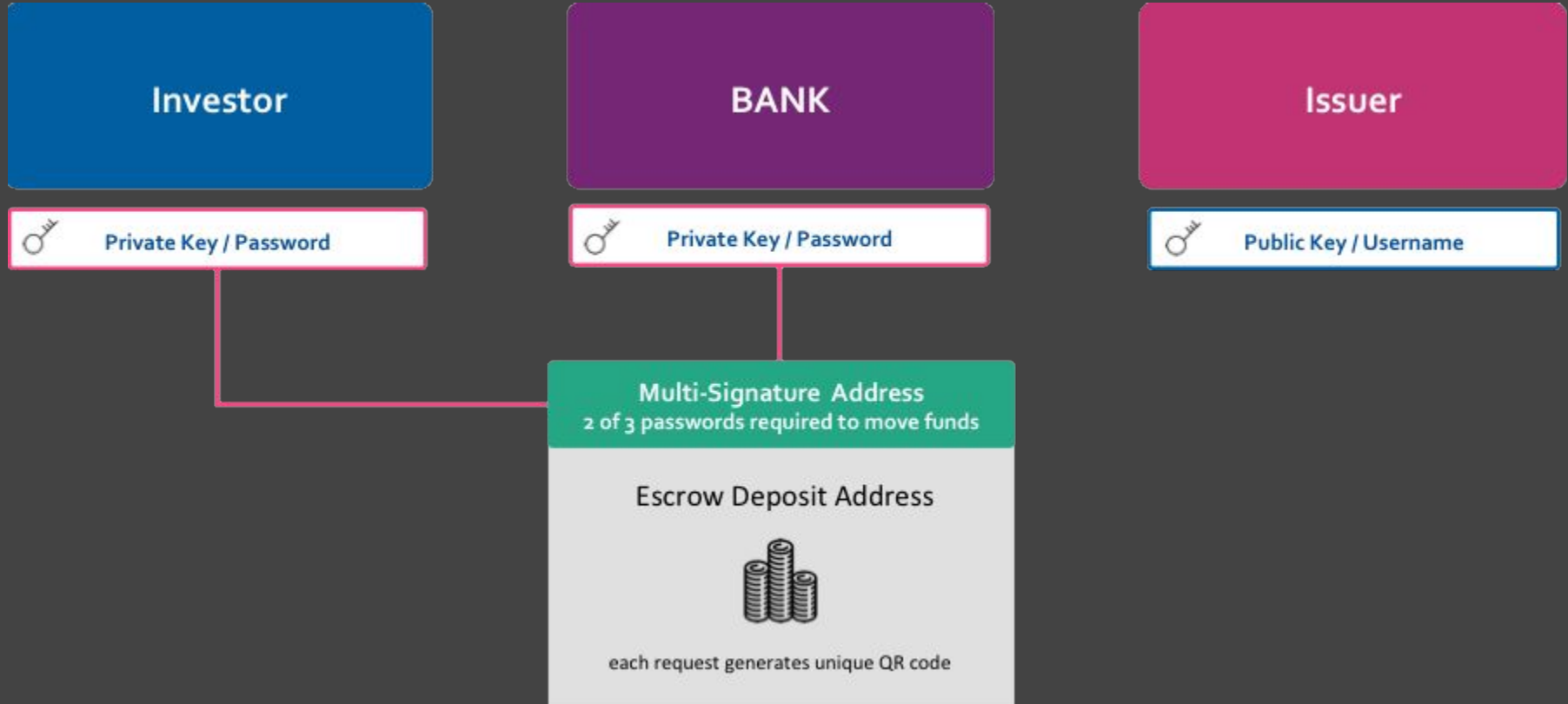
ECF CRYPTO ESCROW - NO ONE HOLDS OR MOVES FUNDS



COMPLETING AN EQUITY CROWDFUNDED INVESTMENT PROCESS



REJECTING INVESTMENT OR RETURNING FUNDS TO INVESTORS



KEY PAIRS



ONE PUBLIC KEY



MULTIPLY PRIVATE KEYS

- Example of a Bitcoin public address (derived from the public key):
`1GzBZ7eK6wzNjp1Wt6AxHo73kJL2tzoErq`
- Example of a Bitcoin private key (used to transfer funds from address):
`L1winVkoRmxMdHKbwssx33Z9ZEuXeJ1eP9CVYvnNn4TdYA32GsWY`
- Example of a Bitcoin extended private key (used by HD protocol):
`xprv9s21ZrQH143K2Ywhg9bhZ5nd31t3EbXsg8v28gkKjSm9PA3PiZ89dWW6YKxWZa2pgTuErQ65K46KGVfu1xCRBCK3Ppd465QGtH7TmxAEiLv`

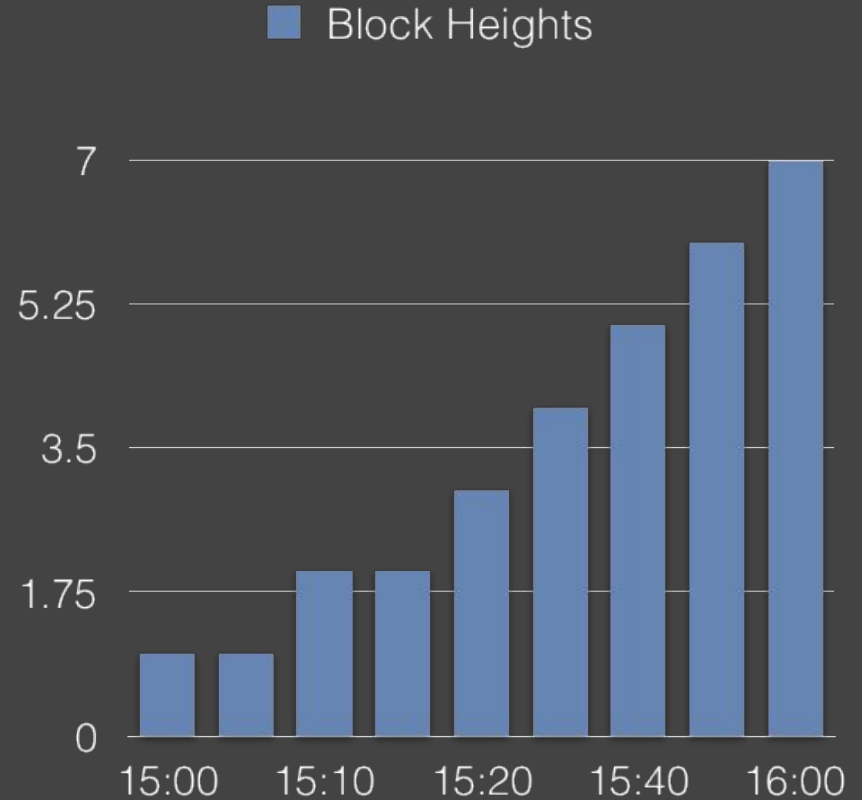
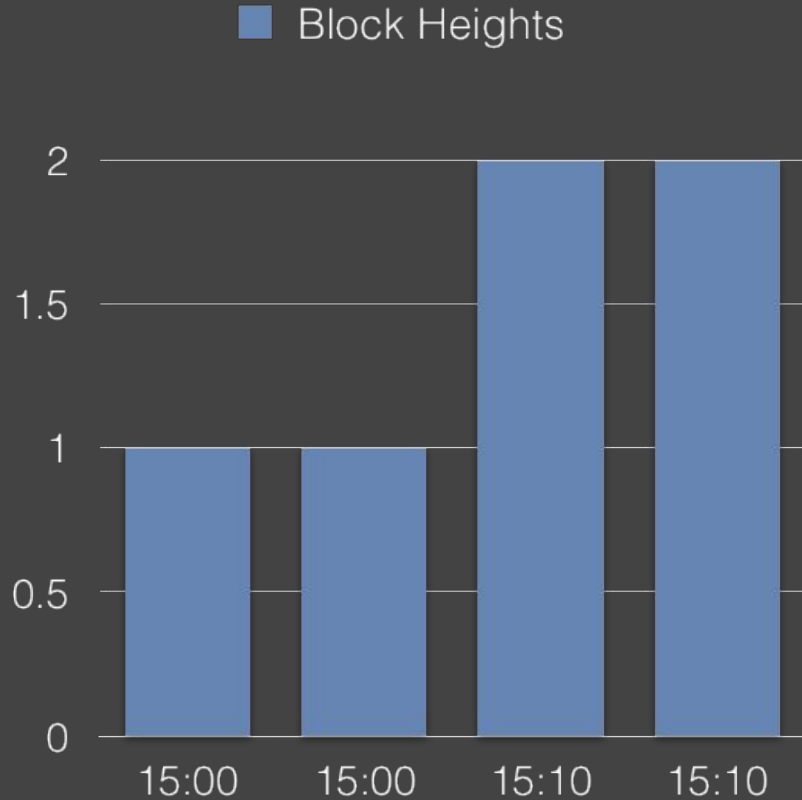
WHAT'S IN A BITCOIN TRANSACTION?

- Multiple unspent inputs are used in order to form the total value sent
- Cannot send proportions of inputs, must use all and send the change back
- Because a single transaction can send multiple values to multiple outputs
- Fees are based upon the total size (inputs and outputs) rather than value
- Paying these fees is done by forgetting to send some value to someone
- Transaction scripts can contain complex variables (multi-sig & timed locks)
- However, they can only contain one OP_Return (38 bytes of arbitrary data)

PUTTING THE BLOCK INTO BLOCKCHAINS

- Transactions are batched into blocks every ten minutes (with Bitcoin)
- The block is added to the chain with a link to the previous block
- With the block added to the chain, its transactions are then confirmed
- As soon as a new block has been added linking to that original block, the transactions from the first block then have 2 confirmations
- It is recommended that large physical transactions wait for 6 confirmations
- Whereas digital downloads may require no confirmations at all

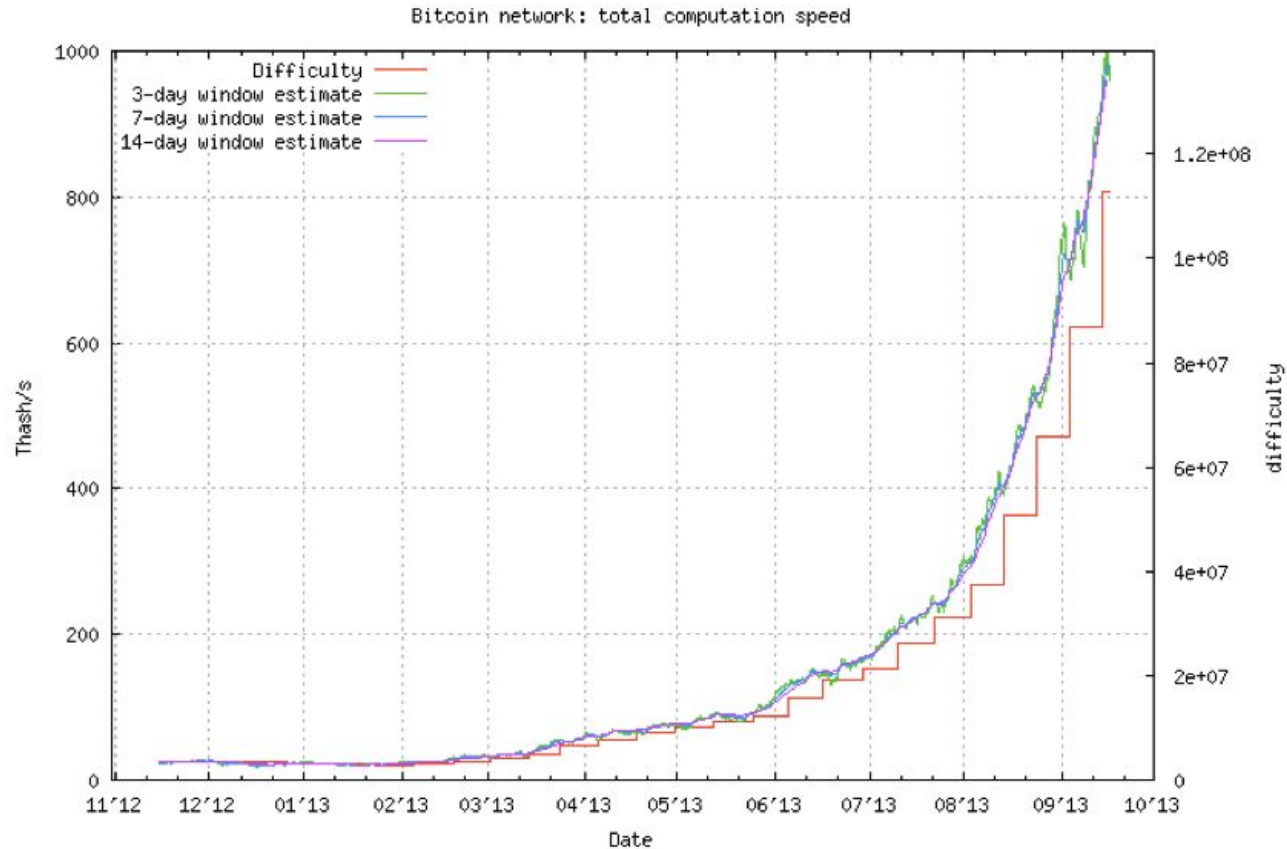
REAL TIME **Vs** TRUTH



MINING FOR NUMBERS

- To reach consensus as to which node has the right to add the next block to the chain, miners compete in a race to solve cryptographic equations
- Miners gather and in-turn verify unconfirmed transactions into blocks
- They then add a nonce (one use number) to the block and hash it
- If the hash has X number of zeros at the beginning it becomes a valid block
- Otherwise the miners increase the nonce and they hash the block again
- Solving these cryptographic equations is becoming increasingly difficult

THIS IS THE HASHING POWER OF THE NETWORK IN 2013



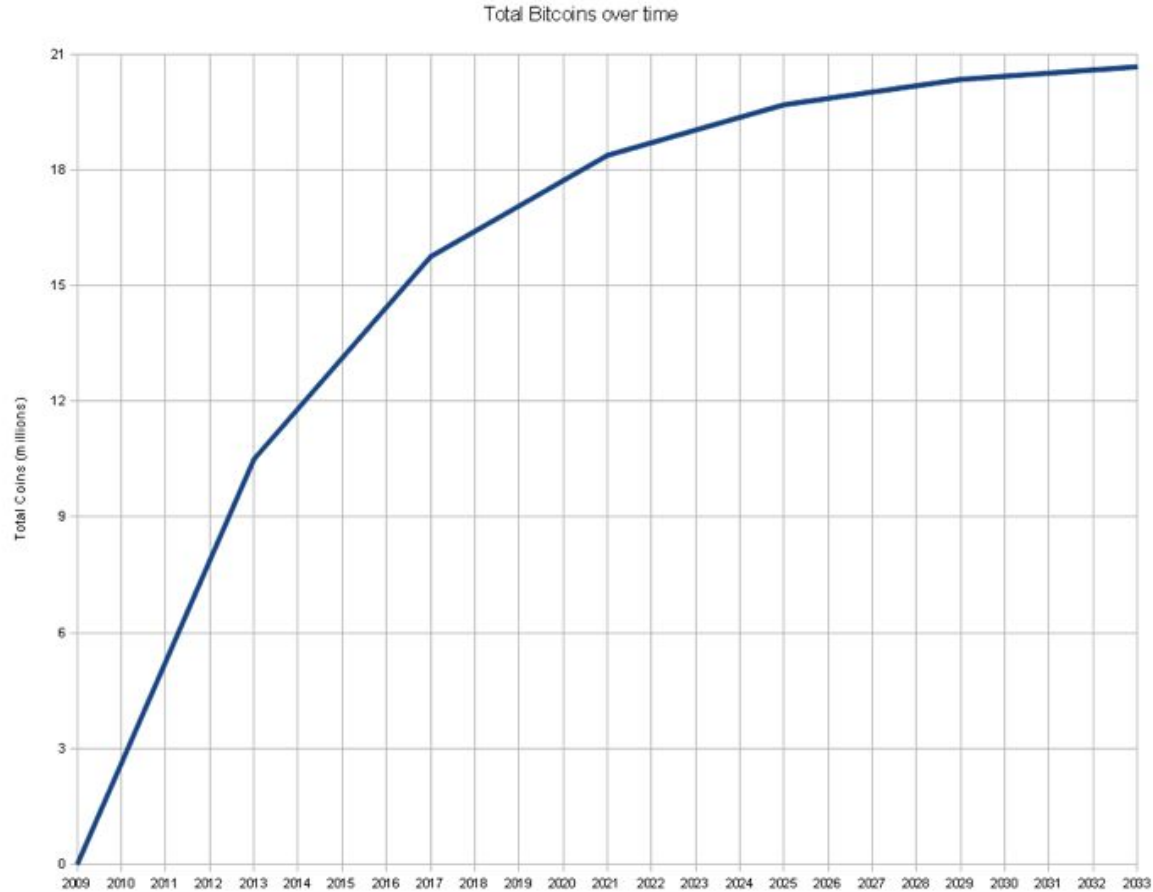


MINING IS NOW A BILLION DOLLAR BUSINESS





LONG TERM FUNCTION OF MINERS IS NOT TO MINE

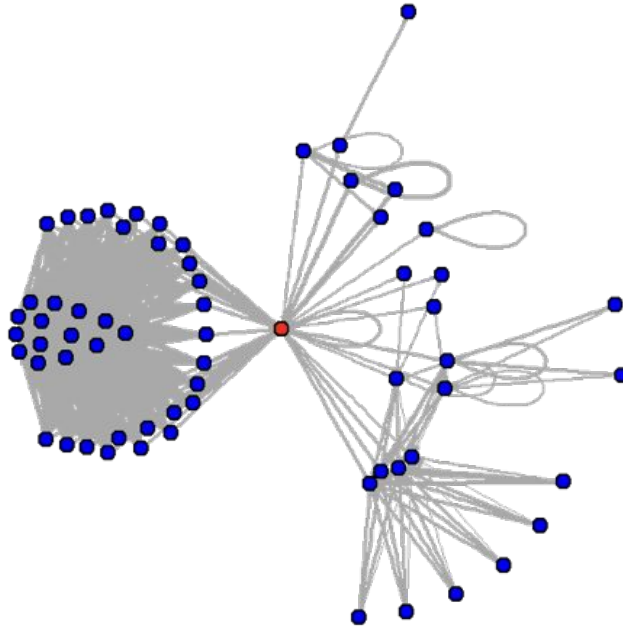


TRUST IS SOLVED VIA TRANSPARENCY - IT'S OPEN TO ALL

```
{
  "address": "DEHfgFYKL97gFFoYHM7UejXBGKjLFzD4za",
  "total_received": 1000000000,
  "total_sent": 800000000,
  "balance": 200000000,
  "unconfirmed_balance": 0,
  "final_balance": 200000000,
  "n_tx": 4,
  "unconfirmed_n_tx": 0,
  "final_n_tx": 4,
  "txs": [
    {
      "block_hash": "e9a38d8fa6b7abcla35a2fad93bfa52e3eb9b1ca5cb2825692db0a3c2f054354",
      "block_height": 1213596,
      "block_index": 35,
      "hash": "3ebaecf042e0dbe20a35c0dd2700c83b13a5a1764e1882c2cc39e4bd81c326cf",
      "addresses": [
        "DEHfgFYKL97gFFoYHM7UejXBGKjLFzD4za",
        "DJHXpkQGcRydRvocWaeUtZir6c2pXHkUn4"
      ],
      "total": 400000000,
      "fees": 100000000,
      "size": 225,
      "preference": "high",
      "relayed_by": "",
      "confirmed": "2016-05-16T14:13:56Z",
      "received": "2016-05-16T14:13:56Z",
      "ver": 1,
      "lock_time": 0,
    }
  ]
}
```

EVERYONE HAS A RECORD OF EVERYTHING - SO BE CAREFUL

**BTC transaction network for
1NfRMkhhm5vjzzqkp2Qb28N7geRQCa4XqC**



TIME TO EXPLORE

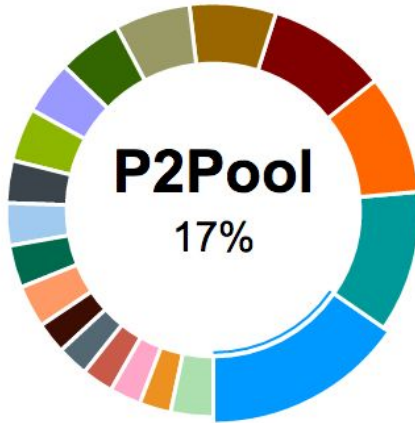


Networks ▾

Blockchain API

Wallet API

Blog



SoChain. Wow.

The Fastest Bitcoin Block Reader

Search for Addresses, Transactions, Blocks



Price 1,359.99 USD/฿
Hashrate 3610.96 PH/s
Activity 149 TX/min
Unconfirmed Tx 30,639
Fee Rate 0.00397766 BTC

29558.449 kb / 1000 kb

Transaction Ages (?)

28h 42m 0s

Latest TX	Size	Sent (฿)
...4de9030b	0.22 kb	0.003735
...933da4f7	0.22 kb	1.864657
...cfbe8c8d	0.22 kb	0.028045
...f9fa0dfe	0.22 kb	1.000000

Block #	Segwit?	Age	Miner	Transactions	Size
463,983	✓	<u>about a minute</u>	BTCChina Pool	1,862	998.10 kb
463,982		<u>9 minutes</u>	1ERfGndG...	1,974	998.21 kb
463,981		<u>24 minutes</u>	ViaBTC	1,996	999.16 kb
463,980		<u>40 minutes</u>	P2Pool	2,019	998.20 kb

TIPS & TRICKS


STORING & USING CRYPTO-CURRENCY

WHO OWNS WHAT? NOT TO MENTION MULTI-SIG

- Paper Vs Brain
- Hardware Vs Software
- Hard Drive Vs Web-Service
- Pseudo-Random Vs Deterministic





- Exchanges are **NOT** wallets ...
(1 exchange hacked every 3 months)


BITCOIN CORE = FULL NODE (RAW CHAIN = 120GB+)


 [Introduction](#) [Resources](#) [Innovation](#) [Participate](#) [FAQ](#) [English](#)


Choose your Bitcoin wallet


Find your wallet and start making payments with merchants and users.


 **Mobile**  **Desktop**  **Hardware**  **Web**



Bitcoin Core



Bitcoin Knots



Bither



GreenBits



Coin.Space



Simple Bitcoin



MultiBit HD



Armory


Electrum


mSIGNA


Bitcoin Wallet


breadwallet

 **Take time to educate yourself**


Bitcoin is different from what you know and use every day. Before you start using Bitcoin for any serious transaction, be sure to read [what you need to know](#) and take appropriate steps to [secure your wallet](#). Always remember that it is your responsibility to choose your wallet carefully and adopt good practices in order to protect your money.

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DOGECOIN CORE = **FULL NODE** (RAW CHAIN = 20GB+)

CHOOSE YOUR WALLET.



MultiDoge
The Dogecoin Light Wallet.



Dogecoin Core.
The Dogecoin "Full" Wallet.
(Community-maintained User Manual)

Learn how to set up your wallet with the [Getting Started Guide](#).

What are the differences between the two?

You have to sync with the blockchain to use Dogecoin.

MultiDoge is a "light" wallet. It syncs with the blockchain by "skimming" through the blockchain, providing fast sync times.

Dogecoin Core, on the other hand, is a "full" wallet. It syncs by downloading it, providing a solid-working Dogecoin wallet.

Advantages and Disadvantages?

JAXX.io = NO NODE (LOCAL STORAGE / APIs)



YOUR BLOCKCHAIN INTERFACE

[Support](#)[View Source Code](#)

Install Now



Android

Mobile

Tablet



iOS

Mobile

Tablet



OS X

Desktop



Chrome

Extension



Firefox

Extension



Windows

Desktop



Linux

Desktop



Hardware

Coming
soon

LET'S CREATE A DETERMINISTIC SALT FOR THE DEVICE FIRST



Setup Wizard
(Here to help you get started)

[INSTALL GUIDE](#)

[DOCS](#)

SALT GENERATION

Before we create any addresses we first need to establish a device salt. Each piece of information you enter is hashed and re-hashed before ever leaving the browser. We never see any of your details from the resulting hashes. At the end of the process a device salt is generated that we can use to more securely create new accounts.

Once entering these details you cannot change them later or recover them without recreating this process with the exact same data.

powered by [blockstrap.com](#)

STEP 1: SALT GENERATION

STEP 2: CREATE ACCOUNT

[HELP](#)

Generating Your Device Salt

This is a one time installation process. Please read the instructions carefully...

[RESET](#)

[IMPORT](#)

Required Salt Components

Your Name

Using your actual name is easier to remember

Your Username

Pick a simple yet memorable username

Your Password

This cannot be changed later

Repeat

Confirm your password again

Password

Date of Birth

Day

Month

Year

City of Birth

It is easier to remember your real city of birth

Optional Security & Settings

App URL

<http://localhost/neuoware/blockstrap/framework/manual.htm>

Salt Component

-- Select Additional Salt Components --

API Service

Blockstrap

Profile Photo

[CHOOSE FILE](#)

Add Photo to Salt?

[SET](#)

[NO](#)

Create custom question for salt?

[SET](#)

[NO](#)

[NEXT STEP](#)

THEN WE CAN CREATE SECURE BRAIN WALLETS



Setup Wizard
(Here to help you)

[INSTALL GUIDE](#)

[DOCS](#)

ACCOUNT CREATION

Please note that we use compounding encryption to generate the necessary seeds used for each individual account created. The element you choose to include gets hashed (along with the device salt) and then re-hashed again. Only publicly available information related to this account is stored, and is strictly within the browser you are currently using.

powered by [blockstrap.com](#)

STEP 1: SALT GENERATION

STEP 2: CREATE ACCOUNT

[HELP](#)

Creating Your First Account

You're almost ready to get started...

[RESET](#)

Now that you have generated your device salt it's time to create your first account.

Required Account Information

Blockchain

-- HD (All Chains) --

Name / Label

You will need to remember these if recreating them later

Password

This should be unique to this individual wallet

Repeat

Password

Please enter your password again

Optional Account Security

More

-- Select Additional Wallet Security --

Custom

Question

This is entirely optional

Answer

Enter the answer to your custom question

Repeat

Better to be safe than sorry


Add question to Salt?

[SET](#)

[NO](#)

[NEXT STEP](#)

LET'S SEND YOU SOME COINS



Mark Smalley
last transaction 9 days ago

[SEND MONEY](#) [LOGOUT](#)

Account Balances

Bitcoin (Testnet) (1)	1.72045066
Bitcoin (1)	0.00037
Dogecoin (1)	236.51198511

powered by [blockstrap.com](#)

[DASHBOARD](#) [ACCOUNTS](#) [CONTACTS](#) [SETTINGS](#) [HELP](#)

Welcome back Mark Smalley

Here is an overview of your recent account activity.

[RESET DEVICE](#) [BACKUP](#)

Blockstrap is still in beta! Please read out [beta / security disclaimer](#) before getting started.

Recent Transactions

1.6789 Dogecoin from My First Wallet	9 DAYS AGO
1.00000001 Dogecoin from My First Wallet	12 DAYS AGO
1 Dogecoin from My First Wallet	2 MONTHS AGO
1.234567 Dogecoin from My First Wallet	5 MONTHS AGO
1.066 Dogecoin from My First Wallet	7 MONTHS AGO
1.23456788 Dogecoin from My First Wallet	7 MONTHS AGO

Quick Send

To

From

-- Select Account --

Amount

[SEND](#)

KEY MANAGEMENT

GENERATING & USING CRYPTOGRAPHIC KEYS

LET'S PLAY WITH THE TOOLBOX

Input Control

Input Type	Private Keys
Private Key 01	Private key to use?

ANOTHER KEY

Transaction Variables

Blockchain	Dogecoin Testnet
Amount	How much to send?
Fee	Leave blank for default
Optional Data	Data added to chain

Output Control

Return Change	Auto Send
Address 01	Send to this address

ANOTHER ADDRESS

RESET

BUILD

Generate new cryptographic keys or re-create deterministic ones below:

GENERATE KEY-PAIR

SETUP MULTI-SIG

SPEND MULTI-SIG

DERIVE CHILD KEYS

PUBLIC KEYS Vs ADDRESSES Vs PRIVATE KEYS Vs HD KEYS

Input Control

Input Type

Private Keys

Private Key 01

Private key to u

Alt

Generate Key Pairs

Generate standard key-pairs using any and (or) all of the options below. However, please note that by not using all 3 fields and (or) insecure values, you may be vulnerable. These tools are merely designed to help understand how cryptographic transactions work.

Blockchain

Dogecoin Testnet

Salt / Full Name

Optional salt for added security...

Seed / Username

Optional seed for added security...

Password

Optional password for added security...

Combining the fields above will result in the following key-pairs and public address:

```
var hash = bitcoin.crypto.sha256(salt + seed + pw + chain).toString("hex")
var keys = $.fn.blockstrap.blockchains.keys(hash, chain, 1, false, true);
```

HD Public

Waiting for inputs ...

HD Private

Waiting for inputs ...

Public

qr

Waiting for inputs ...

Private

qr

Waiting for inputs ...

Public Address

qr

check

Waiting for inputs ...

Output Control

change

Auto Send

01

Send to this address

ANOTHER ADDRESS

DERIVE CHILD KEYS

GENERATE KEY-PAIR

CREATING MULTI-SIGNATURE ACCOUNTS

Input Control

Input Type

Private Keys

Private Key 01

Private key to use

Alt

Create Multisignature Account

×

Generate a multi-signature account by filling-out the details below:

Blockchain

Dogecoin Testnet

Contract Type

2 of 3

1st HD Extended Key

Expecting a hex public key ...

2nd HD Extended Key

Expecting a hex public key ...

3rd HD Extended Key

Expecting a hex public key ...

The three keys are combined via the following function:

```
var ms_keys = $.fn.blockstrap.multisig.generate(false, chain, keys, 2);
```

Multi-Sig Address

Waiting for inputs ...

Redeem Script

Waiting for inputs ...

Output Control

Change

Auto Send

01

Send to this address

ANOTHER ADDRESS

GENERATE KEY-PAIR

SETUP MULTI-SIG

SPEND MULTI-SIG

DERIVE CHILD KEYS

MOVING FUNDS FROM A MULTI-SIGNATURE ACCOUNT

Input Control

Input Type

Private Keys

Private Key 01

Private key to use

Generate Key Pair

Multisignature Control

Send a transaction from a multi-signature account using the form below:

Blockchain

Dogecoin Testnet

Multi-Sig Address

lookup

The address to check / use ...

Redeem Script

test

For validating keys ...

waiting for inputs

To Address

Where to send...?

Amount

How much to send...?

Optional Data

Limited to 38 characters

1st Private Key

Any one of the three ...

2nd Private Key

Any one of the three ...

RESET

SEND

Output Control

Change

Auto Send

01

Send to this address

ANOTHER ADDRESS

Derive Child Keys

HIERARCHICALLY DETERMINISTIC KEYS

Input Control

Input Type

Private Keys

Private Key 01

Private key to use

ALL

Output Control

Change

Auto Send

01

Send to this address

ANOTHER ADDRESS

Derive Child Keys

×

Derive child keys from any extended key using the form below:

Blockchain

Dogecoin Testnet

Extended Key

An extended public or extended private key

Key Depth

Key Index

Child Path

Comma separated list for multiple depths

Key Depth

Key Index

Derived HD Public Key

Waiting for path ...

Derived HD Private Key

Waiting for path ...

Derived Private (WIF) Key

Waiting for path ...

Derived Address

Waiting for path ...

GENERATE KEY-PAIR

SETUP MULTI-SIG

SPEND MULTI-SIG

DERIVE CHILD KEYS

CRYPTO TRANSACTIONS

HOW TO SEND UNSPENTS?

ALICE CAN'T SEND WHAT SHE DOESN'T HAVE AND BOB WANTS 5

ALICE'S UNSPENT INPUTS

10

3

2

THE TX
SIGN OUTPUTS

5

4

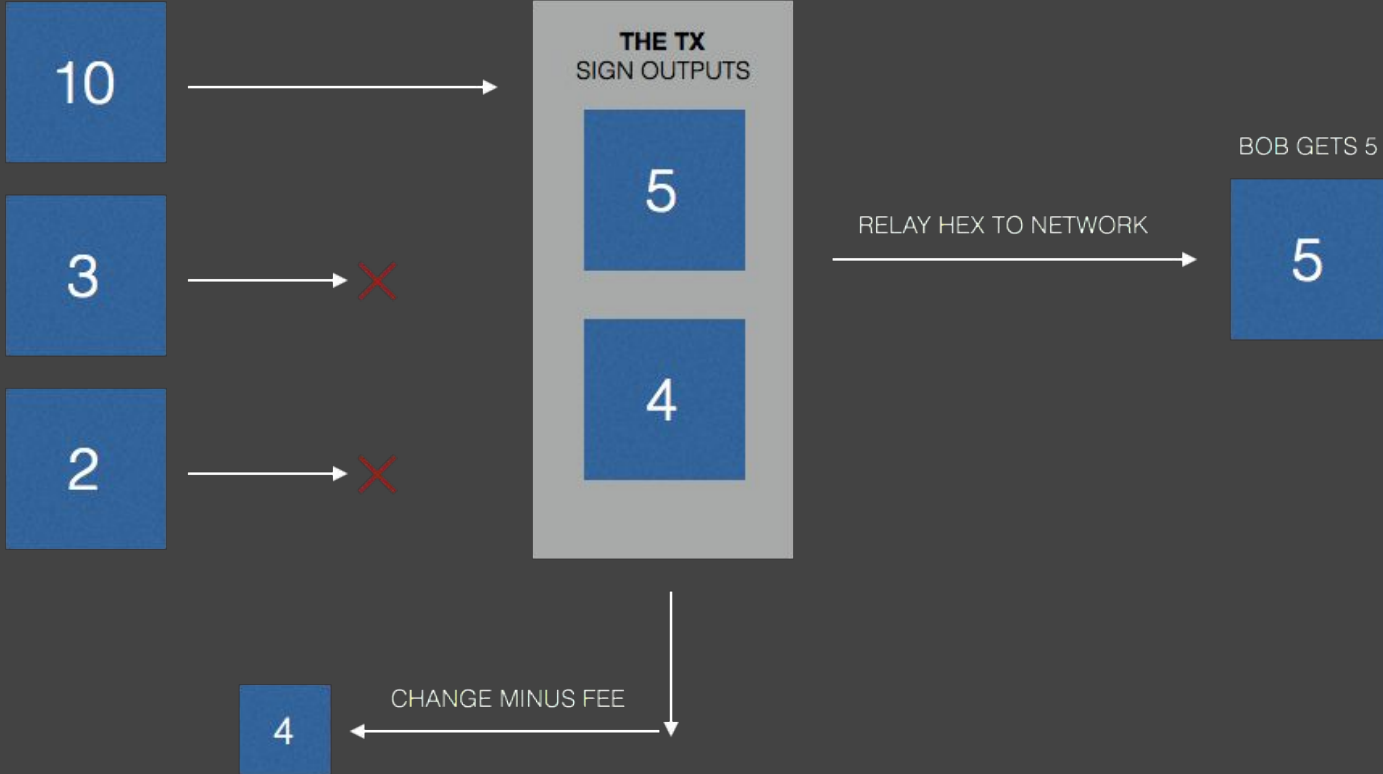
RELAY HEX TO NETWORK

BOB GETS 5

5

CHANGE MINUS FEE

4



TIME FOR SOME CODE

```
$inputs = [ ];  
$bitcoind = new jsonRPCClient("http://un:pw@localhost:8585/");  
$unspents = $bitcoind->listunspent(1, 9999999, [$address_to_check]);  
  
foreach($unspents as $unspent)  
{  
    if($balance >= ($amount_to_send + $required_fee)  
    {  
        $balance = $balance + intval($unspent['amount'] * 100000000);  
        $inputs[ ] = $unspent;  
    }  
}
```

TIME FOR SOME CODE

```
$outputs = [ {  
  address: $address_to_send_to,  
  value: intval($amount_to_send * 100000000)  
},  
{  
  address: $address_to_send_change_to,  
  value: $total_amount_of_inputs - ($amount_to_send + $fee)  
}];  
  
foreach($outputs as $key => $output)  
{  
  $outputs[$key] = sign_tx($output, $private_key);  
}
```

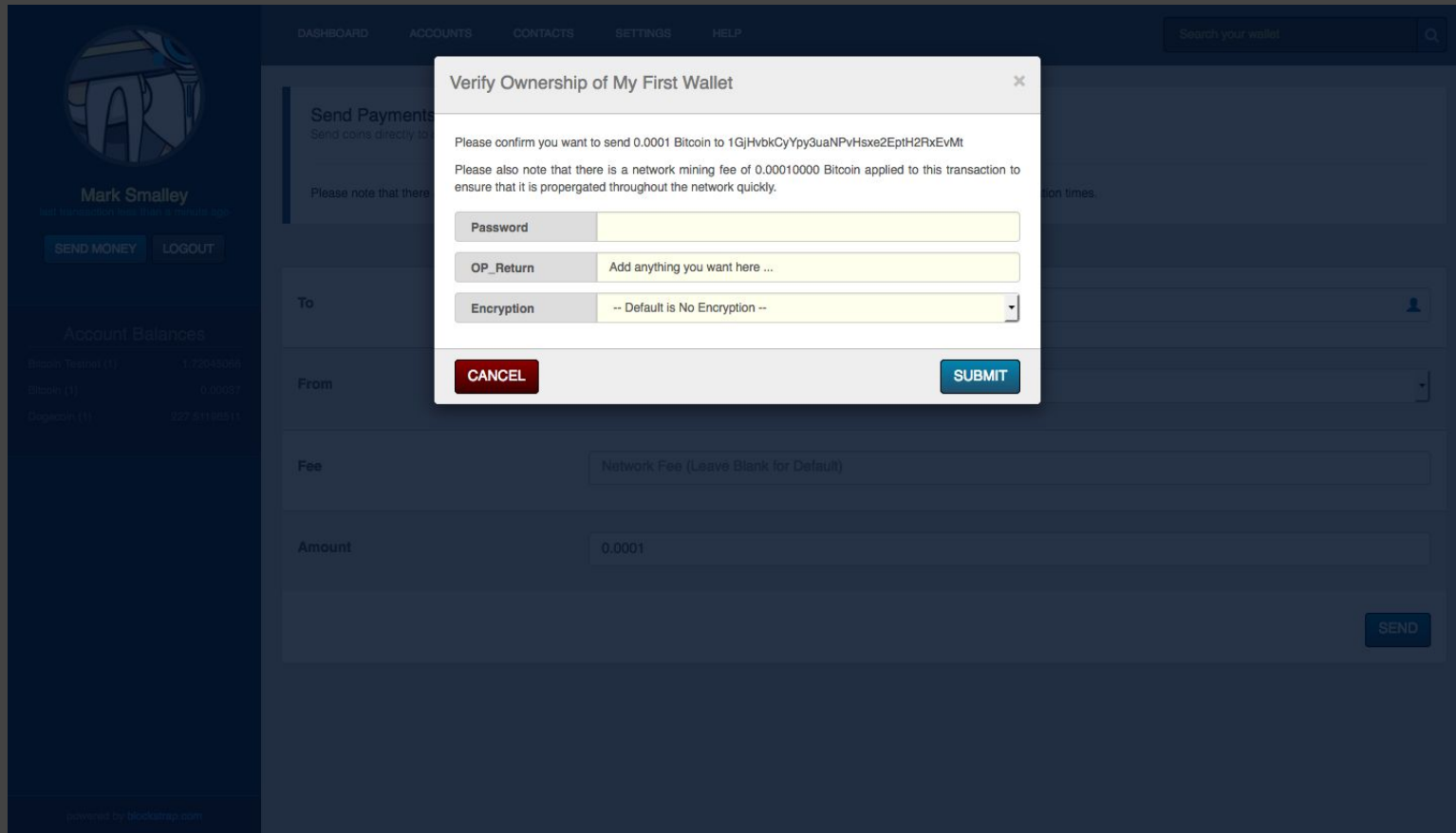
TIME FOR SOME CODE

```
$raw_transaction = transaction_to_hex($inputs, $outputs);  
  
// $raw_transaction_should_equal =  
"0100000001484d40d45b9ea0d652fca8  
258ab7caa42541eb52975857f96fb50cd732c8b481000000008a47304402  
202cb265bf10707bf49346c3515dd3d16fc454618c58ec0a0ff448a676c54ff  
71302206c6624d762a1fcef4618284ead8f08678ac05b13c84235f1654e6a  
d168233e8201410414e301b2328f17442c0b8310d787bf3d8a404cfbd070  
4f135b6ad4b2d3ee751310f981926e53a6e8c39bd7d3fef576c543cce493  
cbac06388f2651d1aacbfcdffffffff0162640100000000001976a914c8e9099  
6c7c6080ee06284600c684ed904d14c5c88ac00000000";  
  
$txid = relay_raw_transaction($raw_transaction);
```

IMMUTABLE DATA

USING THE BLOCKCHAINS FOR STORAGE

STORING DATA IN OP_RETURNS



IPFS = INTERPLANETARY FILE SYSTEM = HTTP REPLACEMENT



[Why](#) [How](#) [Uses](#) [Install](#) [Media](#) [Docs](#) [Blog](#)

IPFS is the Distributed Web

A peer-to-peer hypermedia protocol
to make the web faster, safer, and more open.

[Try it](#)

[Watch demo](#)

SMART CONTRACTS

PROGRAMMABLE MONEY & AUTOMATION

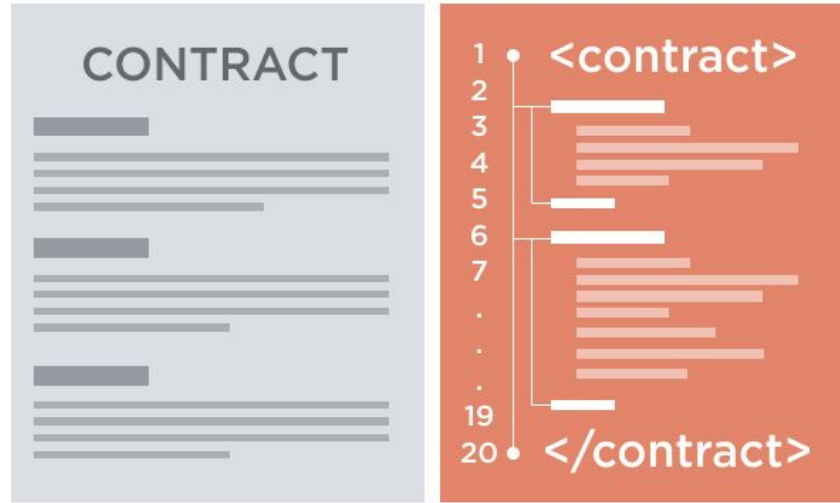
SMART CONTRACTS WERE POPULARIZED BY ETHEREUM



THE WORLD'S SUPER COMPUTER...?

- ⦿ Raised US\$15 Million in crowd-funding when launching their Ether currency
- ⦿ Aiming to be the first turing complete blockchain, they have almost achieved it
- ⦿ Heavily supported by Microsoft and also used by IBM for their IoT platform
- ⦿ Recently raised US\$150 Million in crowd-funding their own venture fund
- ⦿ However, the more moving parts a system has - the more likely it is to break

IN REALITY - SMART CONTRACTS ARE EVERYWHERE



- Even Bitcoin utilizes basic smart contracts (with over 100 script functions)
- Smart contracts are snippets of code stored and executed by the network
- They can perform transactional based events if defined conditions are met

WHAT'S REALLY IN A TRANSACTION?

```
api.blockcypher.com/v1/btc/test3/txs/235a88e9853c1c16ef47f795f13ce200c2e1bf37667e99973e1c829f95b95f7

{
  "block_hash": "0000000009f30c59abf2f8556c0949c79b54764f4cbb223ca43527394d3ee2f",
  "block_height": 847281,
  "block_index": 24,
  "hash": "235a88e9853c1c16ef47f795f13ce200c2e1bf37667e99973e1c829f95b95f7",
  "addresses": [
    "mpNENnsFcL8a5hPxfPrYPkZgAkbbFpxLF",
    "mq7tNFrbi3E3fsuUbsTsA7keoeYL6gYzv2"
  ],
  "total": 86124000,
  "fees": 10000,
  "size": 339,
  "preference": "medium",
  "relayed_by": "",
  "confirmed": "2016-05-16T07:51:20Z",
  "received": "2016-05-16T07:51:20Z",
  "ver": 1,
  "lock_time": 0,
  "double_spend": false,
  "win_sz": 2,
  "vout_sz": 1,
  "confirmations": 19557,
  "confidence": 1,
  "inputs": [
    {
      "prev_hash": "bb4cef4d48dba1916c73552342b660be00535c43ad47462abf43a402cc2a61a1",
      "script": "4730440220618bd76a683d2603edb570e66b851f85dd594abd7a3c25a2b29064b016959075022010dea4cd777e04a393cf1bca0d7ba5916e3fcb8c67efa33268a936bf96b9a7e012103530d0cbdfcd448b8d96ac9e1cbdc88a2f60e05a7f16e7ab321185afb0523e9fc",
      "sequence": 4294967295,
      "addresses": [
        "mpNENnsFcL8a5hPxfPrYPkZgAkbbFpxLF"
      ],
      "script_type": "pay-to-pubkey-hash"
    },
    {
      "prev_hash": "42662b2544a7f59a1abd004a8e15c714f108f553f1dd3f0617982eb5b8ac468c",
      "script": "483045022100f7ab281bcb605550098f62a097b6dbef79a9f35261aae9dc01aec54a08e212b02201261b2d0f44545a551fe54f1777597e747523f0a66b7cfc74521828c67f23887012103530d0cbdfcd448b8d96ac9e1cbdc88a2f60e05a7f16e7ab321185afb0523e9fc",
      "sequence": 4294967295,
      "addresses": [
        "mpNENnsFcL8a5hPxfPrYPkZgAkbbFpxLF"
      ],
      "script_type": "pay-to-pubkey-hash"
    }
  ],
  "outputs": [
    {
      "value": 86124000,
      "script": "76a914695469844938fd58e5cf59987f4cc063d4d657a788ac",
      "addresses": [
        "mq7tNFrbi3E3fsuUbsTsA7keoeYL6gYzv2"
      ]
    }
  ]
}
```

DECODING SCRIPT HEXES

- 80% of transactions are known as standard transactions

OP_DUP OP_HASH160 <pubKeyHash>

OP_EQUALVERIFY OP_CHECKSIG

- Approximately 1% of transactions contain OP_Returns

OP_RETURN <hexedData>

- There are even a few hidden puzzles on the blockchain...

OP_HASH256

6fe28c0ab6f1b372c1a6a246ae63f74f931e8365e15a089c68d6190000000000

OP_EQUAL

ETHEREUM TAKES THINGS ONE STEP FURTHER

```
contract MyToken {  
  
    string public standard = 'Token 0.1';  
    string public name;  
    string public symbol;  
    uint8 public decimals;  
    uint256 public totalSupply;  
  
    function MyToken( ... )  
    function transfer( ... )  
    function approveAndCall( ... )  
    function transferFrom( ... )  
  
}
```

LET'S EXPLORE

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TOTAL SUPPLY OF 88,464,230.97 ETHER

\$10.56 @ 0.01085 BTC/ETH

LAST BLOCK

3104622 (14.40s Avg)

Hash Rate

7,766.31 GH/s

TRANSACTIONS

16160931

Network Difficulty

111.88 TH

14 day Ethereum Transaction History



Blocks

[View All](#)

Block 3104622

> 15 secs ago

Mined By [Ethpool_2](#)

3 txns IN 12 secs

Block Reward 5.0015 Ether

Block 3104621

> 27 secs ago

Mined By [Ethermine](#)

5 txns IN 13 secs

Block Reward 5.00409 Ether

Block 3104620

> 40 secs ago

Mined By [0x96338149e9f6c26...](#)

4 txns IN 4 secs

Block Reward 5.00187 Ether

Block 3104619

> 44 secs ago

Mined By [DwarfPool1](#)

0 txns IN 20 secs

Block Reward 5 Ether

Transactions

[View All](#)TX# [0X8C82912A90EB2442A0DD89...](#)

> 15 secs ago

From [0xea674fddde714fd9...](#) To [0xdc17d353b01285...](#)

Amount 1.0045803417014828 Ether

TX# [0X30803DA432AD0EC50B674EB...](#)

> 15 secs ago

From [0xf34a762291e2578...](#) To [0x6fc82a5fe25a5cd...](#)

Amount 0.09972424738776952 Ether

TX# [0X9F3AEC03CD8978780C11C59...](#)

> 15 secs ago

From [0x2e67179261a34b...](#) To [0x44e9bfd5eb0651...](#)

Amount 1.506161 Ether

TX# [0X69429B51113744361D7EF7D...](#)

> 27 secs ago

From [0xea674fddde714fd9...](#) To [0xb2cb64a2574811...](#)

Amount 1.0055965023717969 Ether



THANK YOU FOR YOUR TIME

please email us for more information - founders@neuroware.io