

Web3j and Blockchain

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Blk.io

King's Collage Web3j Workshop, 2018

About Me

- My name is pronounced ee-vai-lo.
- Graduated King's College in 2017.
- Started working for blk.io in September 2017.
- Web3j maintainer.

Outline

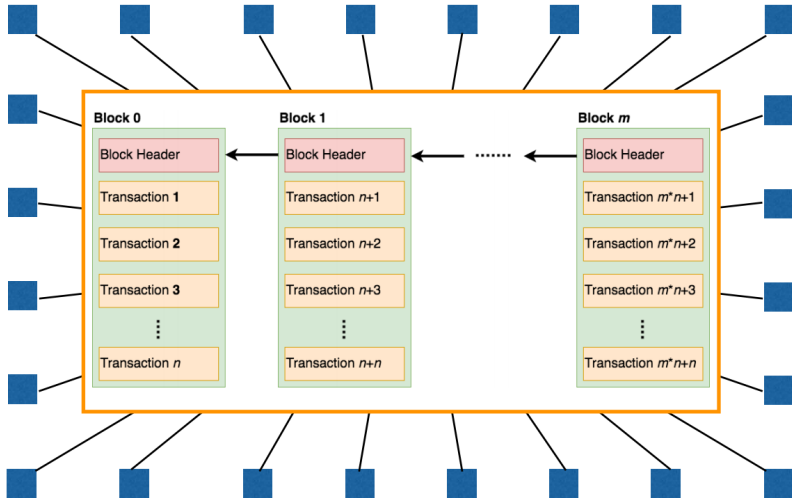
- 1 Introduction
 - Blockchain
 - Ethereum

- 2 Web3j
 - Basics
 - Workshop

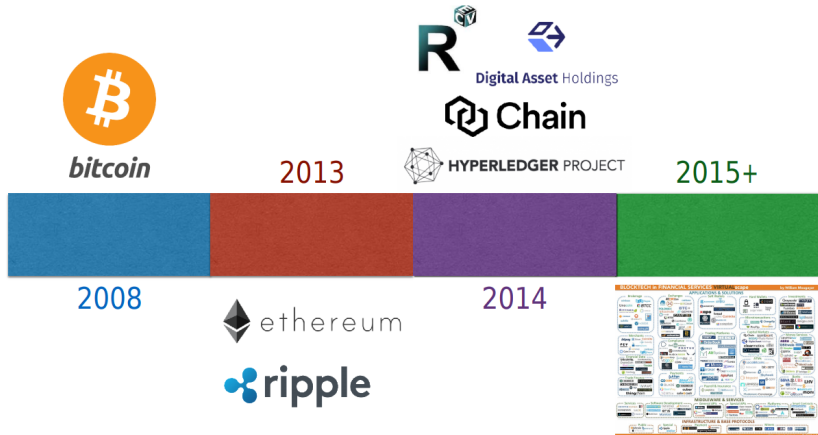
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Blockchain



Blockchain



Blockchain

BLOCKTECH in FINANCIAL SERVICES VIRTUALscape

by William Mougayar

APPLICATIONS & SOLUTIONS



MIDDLEWARE & SERVICES



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Ethereum

- Very big distributed computer.
- Turing-complete virtual machine.
- Public blockchain (mainnet & testnet).

Ether

- Fuel of the blockchain.
- Massive market capitalization.
- Economic incentive to participate in consensus.
- Obtained buy mining/trading.
- Associated with an address 0x.... and a wallet file.

Smart Contract

- Computerized contract.
- Code + data that lives on the blockchain at an address.
- Transactions call functions \Rightarrow state transition.

Greeter Contract

```
1  pragma solidity ^0.4.2;
2
3  contract mortal {
4      /* Define variable owner of the type address*/
5      address owner;
6
7      /* this function is executed at initialization
8       and sets the owner of the contract */
9      function mortal() { owner = msg.sender; }
10
11     /* Function to recover the funds on the contract */
12     function kill() { if (msg.sender == owner) suicide(owner); }
13 }
14
15 contract greeter is mortal {
16     /* define variable greeting of the type string */
17     string greeting;
18
19     /* this runs when the contract is executed */
20     function greeter(string _greeting) public {
21         greeting = _greeting;
22     }
23
24     /* main function */
25     function greet() constant returns (string) {
26         return greeting;
27     }
28 }
```

Transactions

- Transfer Ether.
- Deploy a smart contract.
- Call function of a smart contract.

Integrating with Ethereum

- Smart contract application binary interface encoders/decoders
- 256 bit numeric types
- Multiple transaction types
- Wallet management
- ...

Transaction

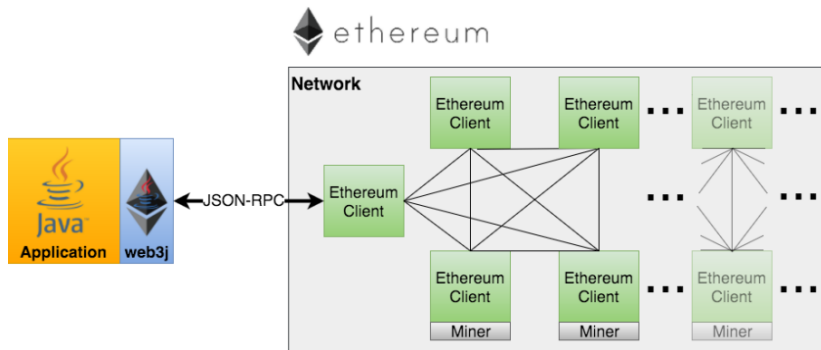
Questions?

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Web3j



Web3j Features

- Complete Ethereum JSON-RPC implementation
- Ethereum wallet support
- Smart contract wrappers
- Command line tools
- Android compatible

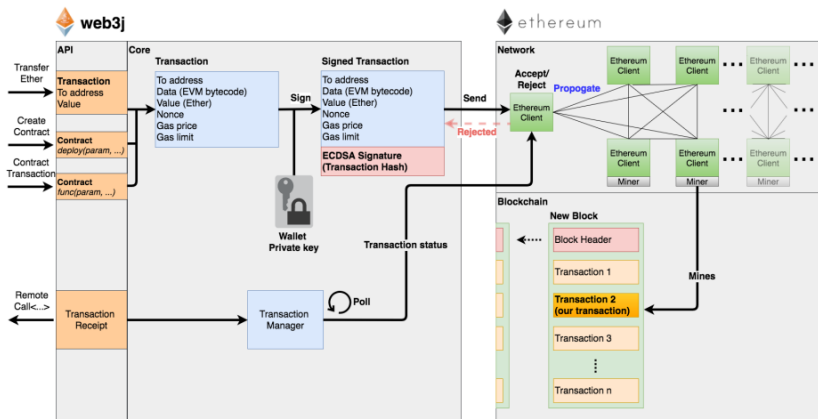
Web3j v3.x

- Modular
- Sync/async & RX Observable API
- ENS support (new!)
- Truffle support (new!)

Modules

- utils
- rlp
- abi
- tuples
- core
- codegen
- console (command-line tools)
- geth
- parity
- infura

Web3j Transaction



Questions

Questions?

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Workshop

- 1. Download Web3j
- 2. Clone workshop repository
- 3. Deploy smart contract
- 4. Register event listener on smart contract
- 5. Send transaction to your mates smart contract

Summary

- Recap on **Ethereum**.
- Introduction to **Web3j**.
- Feedback for workshop?

Further Reading



C. Svensson.

Web3j docs.

<https://web3j.readthedocs.io/en/latest/>



OpenZeppelin.

OpenZeppelin Solidity library.

<https://openzeppelin.org/api/docs/open-zeppelin.html>



I. Kirilov.

Web3j Gitter.

<https://gitter.im/web3j/web3j>