Building for Blockchain

Boston Code Camp
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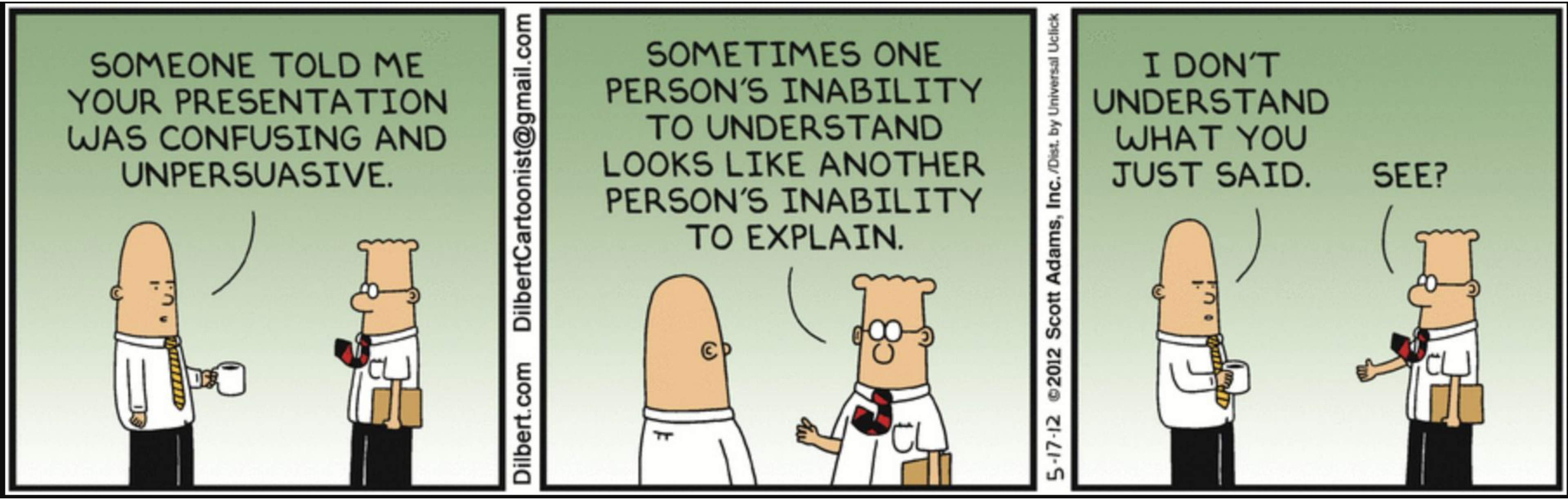
Maura Wilder
VP of Engineering
Metallicus

SOMEONE TOLD ME YOUR PRESENTATION WAS CONFUSING AND UNPERSUASIVE.
SOMETIMES ONE PERSON'S INABILITY TO UNDERSTAND LOOKS LIKE ANOTHER PERSON'S INABILITY TO EXPLAIN.
I DON'T UNDERSTAND WHAT YOU JUST SAID.
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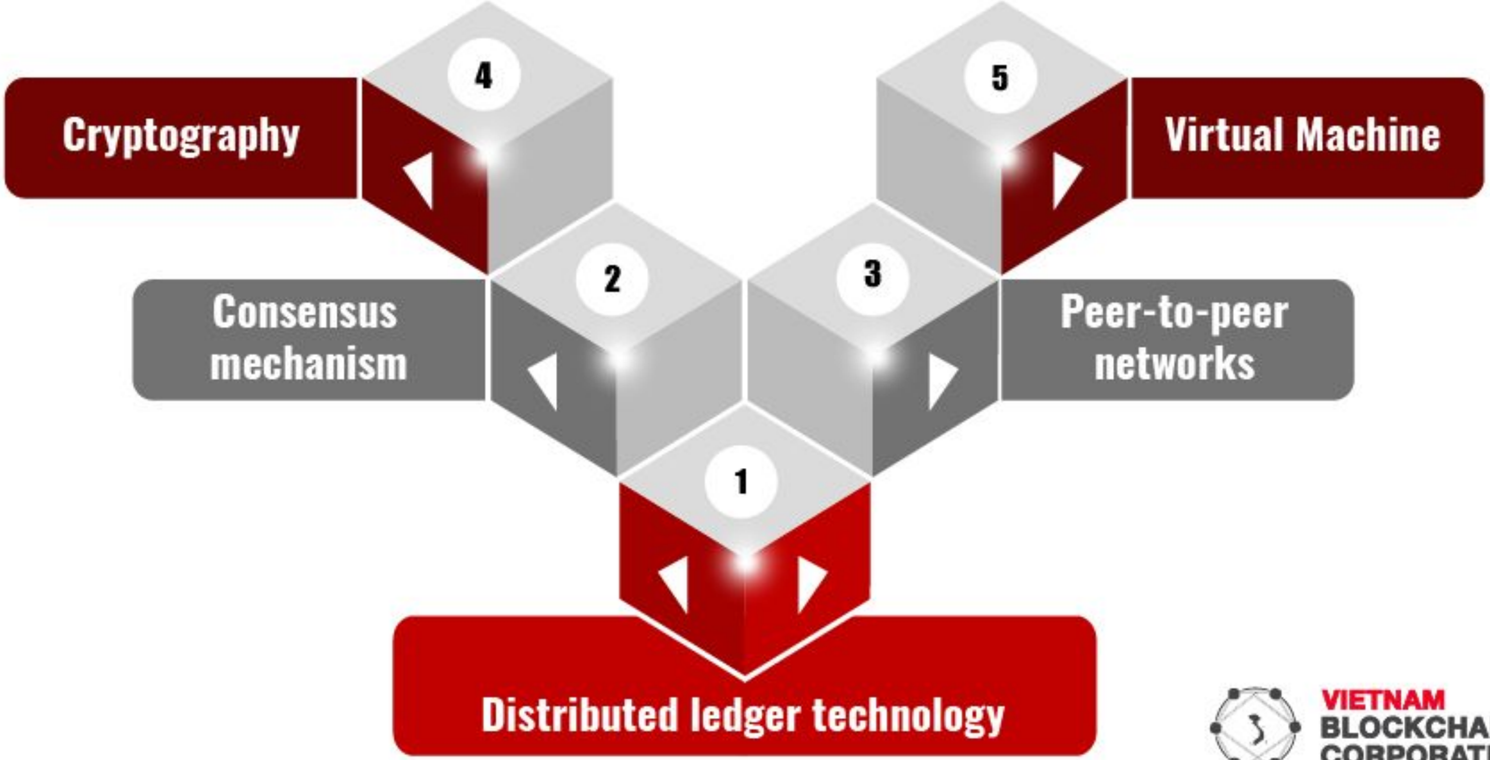
5 BASIC COMPONENTS OF #BLOCKCHAIN



4 Cryptography

5 Virtual Machine

2 Consensus mechanism

3 Peer-to-peer networks

1 Distributed ledger technology

VIETNAM BLOCKCHAIN CORPORATION

Building Blockchains: Systems

- **What's in a node?**
  - **Storage** via distributed ledger
  - **Compute** via virtual machines or bytecode interpreter
  - **Peer-to-Peer networking**
  - **Consensus mechanism**, ex. proof of work, proof of stake

Building Blockchains: The code

Ethereum clients:

https://ethernodes.org/

Golang: https://github.com/ethereum/go-ethereum

C#: https://github.com/NethermindEth/nethermind

Other blockchains and clients:

Bitcoin, C++: https://github.com/bitcoin/bitcoin

Metal Blockchain, Golang: https://github.com/MetalBlockchain/metalgo

Cardano, Haskell: https://github.com/input-output-hk/cardano-node

Solana, Rust: https://github.com/solana-labs/solana

Coding Against Blockchain Data

- Traditional programming against APIs
  - JSON-RPC (direct)
  - Archive Nodes (indirect)
- Services that you can use for this:
  - Alchemy (https://www.alchemy.com/)
  - Ankr (https://www.ankr.com/)
  - Infura (https://www.infura.io/)

Smart Contracts: About

- Execute “on-chain”
- Multi-lingual, needs to compile for the VM or byte code interpreter
  - Ethereum: Solidity, Vyper
  - Solana: C, C++, Rust
  - Proton: C++, Typescript
- Contact code itself is stored “on-chain”
- Can call other contracts
- Lots of tools available in the EVM ecosystem

Smart Contracts: The Code

```
// contracts/bccctoken.sol
// SPDX-License-Identifier: ISC
pragma solidity ^0.8.0;

import "@openzeppelin/contracts/token/ERC20/ERC20.sol";

contract BCCCoin is ERC20 {
   constructor(uint256 initialSupply) ERC20("Boston Code Camp Coin", "BCCC") {
       _mint(msg.sender, initialSupply);
   }
}
```

Web3: Key Concepts

- Decentralized compute
- User owns and controls own data
- Self sovereign identity
- Internet money (cryptocurrency)
- Decentralized Finance (DEFI)

Web3: Examples

- Smart contract and interacting with blockchain data as previously seen
- Login via crypto wallet
- Approving some action by way of using the private key associated with your public address.

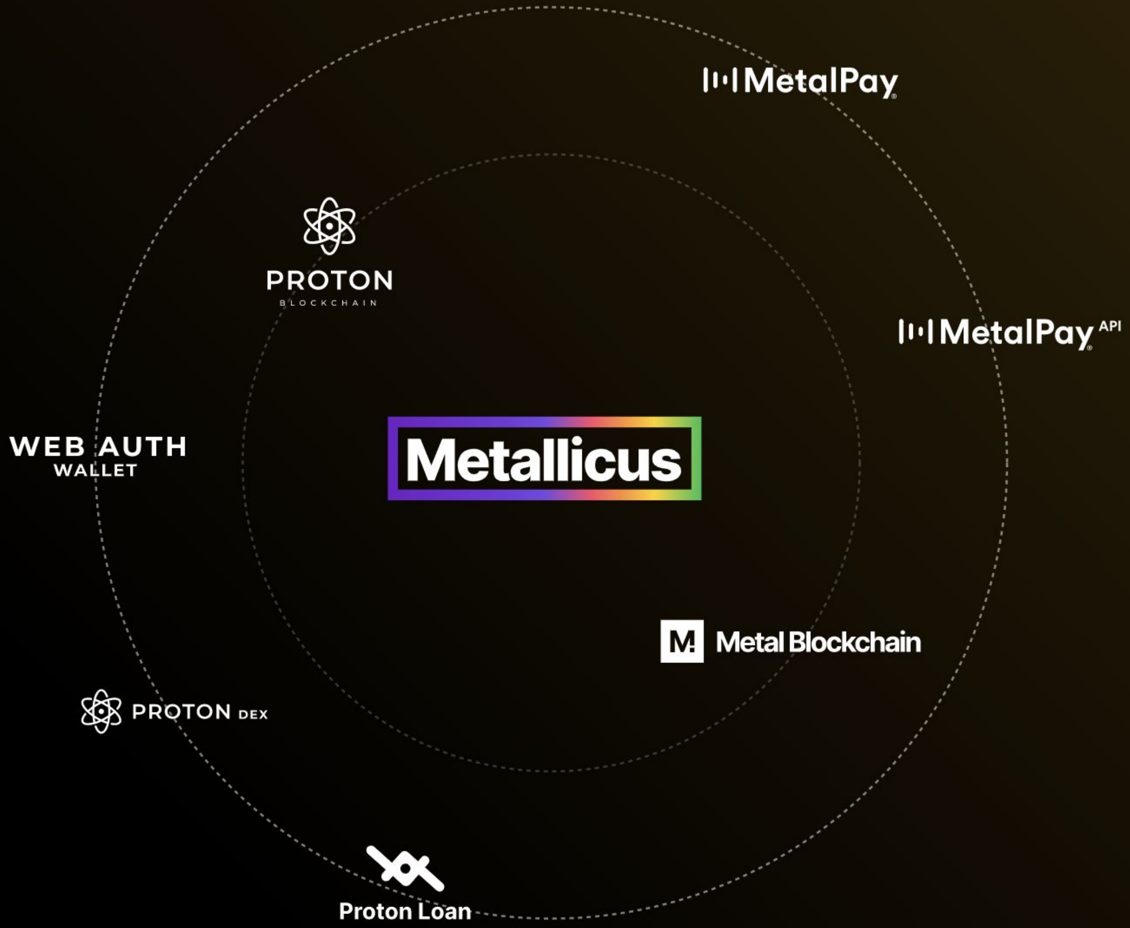
Conclusion

Resources

- https://ethereum.org/en/developers/docs/
- https://docs.openzeppelin.com/
- https://hardhat.org/docs
- https://github.com/squdgy (will add shown github project in coming days)
- https://squdgy.wordpress.com/

My contact info:

- Twitter: @squdgy
- Telegram: @squdgy
- Email: maura@metallicus.com, maura@devpartners.com



Metallicus

MetalPay

MetalPay API

PROTON BLOCKCHAIN

WEB AUTH WALLET

Metal Blockchain

PROTON DEX

Proton Loan