Blockchain Technologies

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What is a Blockchain?

A distributed, peer-to-peer replicated, integrity protected linked-list of data blocks

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Hyperledger

- IBM Research prototype “OpenBlockchain"
- OpenSourced by IBM and donated to the Linux Foundation
- Any member can contribute and steer development
- 1st stable release "Hyerledger Fabric V1.0" was announced at IBM Interconnect 2017

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What is a Hyperledger Fabric?

"Hyperledger Fabric is a enterprise grade, distributed based on blockchain technology that use smart contracts that enforce trust between entities" @gatakka

Ivan Vankov

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Misconceptions

- Hyperledger is a Blockchain
- Hyperledger is not a Cryptocurrency
- Hyperledger is not using Mining/PoW(Proof of Work)
- But preserves important properties of a crypto blockchain

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Main benefit

- throughput of the system
- Ethereum 1000 transactions per minute
- Hyperledger 500 000 transactions per minute
- No loss of money through mining (electricity)

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Architecture Intro

- distributed by design
- no single point of failure

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Fabric-CA

- User management through X.509 certificates
- Attributes inside certificates are used to define roles and rights
- Can be attached to LDAP / Active Directory
- "only" a tool, can also use standalone OpenSSL

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Peer

- place where ledger is stored

Orderer

- coordinator for transactions

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Membership Service Provider

- Certificate Management for Hyperledger Fabric Components

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Channel

- data isolation / multi-tenancy
- every party must accept an additional party to join
- peers take part in channel
- add / remove possible during runtime

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Chaincode

- Smart-contract / Business-logic over data in the ledger
- Only way to interact with the ledger
- NodeJS, GoLang, Java
- no limit of what you can use, external libraries, external network calls
- Chaincode runs inside channel

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Chaincode

- Needs to be installed and instantiated on every peer (can be automated)

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Policies

- Define level of security
- No chaincode without policy file

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RECAP

- Peer - may be part of one or many channels
- Every single channel has a separate ledger
- Every channel has one or many chaincodes
- Every chain code has a different policy

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1 ORGANISATION

2 ORGANISATION

SDK

Transaction proposal

Peer 0

Peer 1

Peer 2

Invokation Request

Endorsement response

Orderer

Invocation

Verify policy

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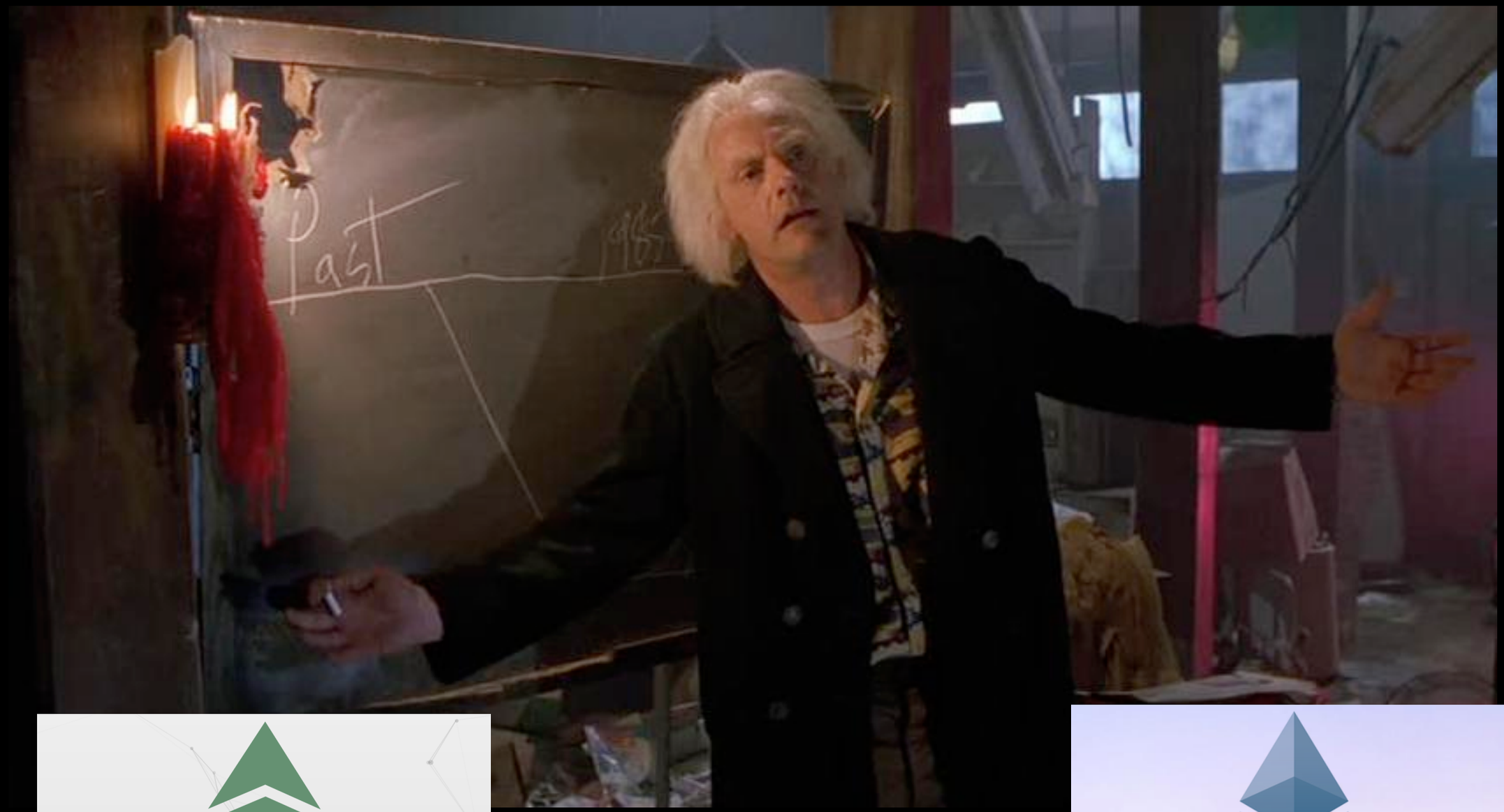

ethereum
classic

decentralized immutable unstoppable

ETC / ETH price (USD) = 1.04 / 12.45 = 8.34 %

ETC / ETH hashrate (GH/s) = 502 / 6,959 = 7.21 %

ethereum

HOMESTEAD RELEASE

BLOCKCHAIN APP PLATFORM

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De-intermediation with Smart Contracts

- trusted 3rd parties provide trust on an agreed business process

- Smart Contracts on top of Blockchains solve these problems

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Confidentiality

- ***Hyperledger supports anonymous transactions***

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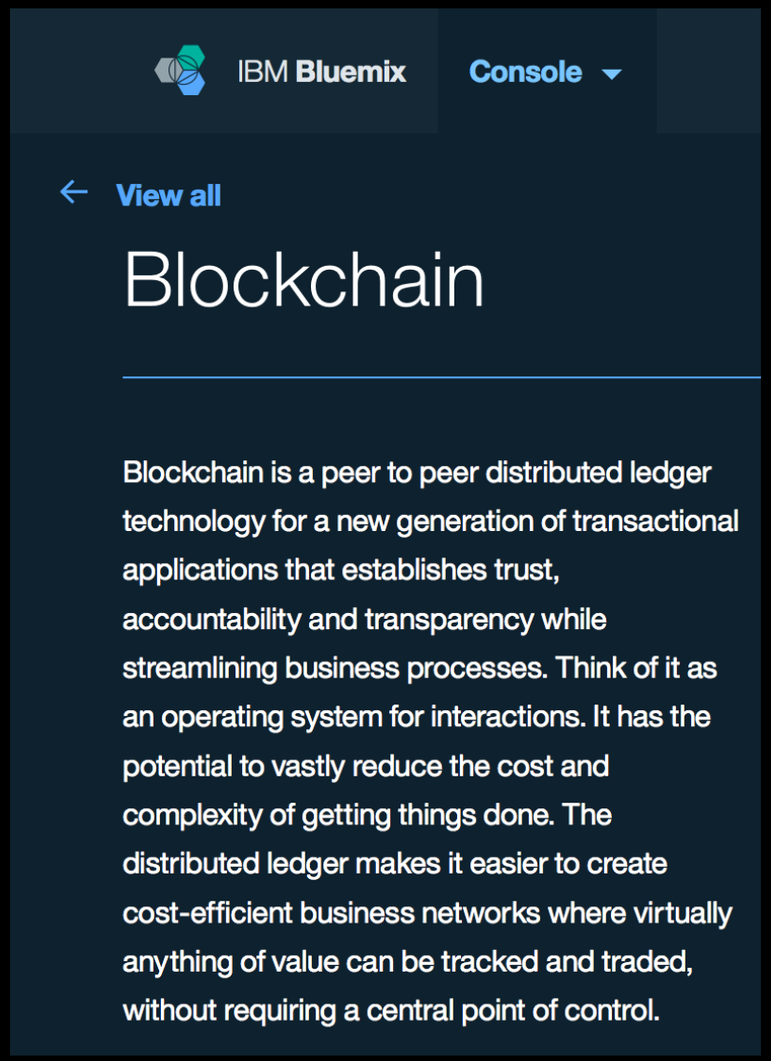
On the cloud

http://ibm.biz/joinIBMCloud



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