AKA Investors’ Meeting 2016

Blockchain Unchained

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Deloitte
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Which problem does Blockchain solve?
Asset ownership and transactions in history

Blockchain is a quantum leap for asset transactions / proof of ownership

**Physical proof of ownership**
Proof was made by physical existence
(German „besitzen“ = sit on top of the asset)

**Analog proof of ownership**
Proof by analog paper documentation
- e.g. Land registry, registered securities

**Digital proof of ownership**
Proof by digital centralized databases
- e.g. Apple Music, Bank Account

**Blockchain proof of ownership**
Proof of work in the Blockchain
- Immutable track of all transactions

**Executing & securing transactions is**
- A trillion € business
- The raison d’être of entire industries, e.g. FSI
- A central element of the organization of our societies and a legitimation of the state as such
- A source of frustration, inefficiency, gatekeeping and rent extraction
Blockchain enables asset transactions

Internet exchanges information whereas Blockchain exchanges assets

Internet transfers information by duplication

The Blockchain is an immutable, distributed ledger designed to transfer assets P2P thereby discarding intermediaries
How does Blockchain work?
How does a transaction in a Blockchain work

Adding a transaction into a Blockchain follows 8 steps:

1. **Transaction**
   
   Two parties agree on a transaction.

2. **Broadcasting**
   
   The transaction gets broadcasted to ‘miners’ (a network of decentralized computers) for processing.

3. **Verification**
   
   Nodes verify if the transaction is valid based on the rules of the network.

4. **Structuring**
   
   Transactions are gathered in blocks of pending transactions. A block contains a reference to a previous block and a group of transactions. The sequence creates a secure, interdependent chain.

5. **Proof-of-Work**
   
   Miners solve a complex mathematical puzzle - proof of work - potential solutions must prove the appropriate level of computing power was drained in solving.

6. **Broadcasting**
   
   The successful miner broadcasts its proof of work to other miners.

7. **Verification**
   
   Other miners verify the authenticity of the proof of work.

8. **Adding the Block**
   
   The verified block of transactions gets immutable added to the Blockchain.
What is a Blockchain?

A Blockchain is a digital, chronologically updated, distributed and cryptographically sealed record of all data transfer activity.

**Digital**
Almost any type of information can be expressed in digital format. Subsequently referenced through a ledger entry.

**Chronologically updated**
Permanent time stamped each block points and refers to the data stored in the previous block in the chain, so all blocks are linked to one another.

**Distributed**
Identical copies of all records are shared. Participants can independently verify information. Verification processes are not dependent on a centralized verification. If one node fails, the remaining can continue to operate ensuring availability and reliability.

**Cryptographically sealed**
Permanent time stamped each block points and refers to the data stored in the previous block in the chain, so all blocks are linked to one another.
Which technology platforms exist for Blockchain?
Examples of Blockchain platforms
The field is still growing and new platforms emerge on a weekly basis

<table>
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<th>Protocol Features</th>
<th>Bitcoin</th>
<th>Ethereum</th>
<th>Hyperledger</th>
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<tr>
<td><strong>Functional capabilities</strong></td>
<td>• Cryptocurrency</td>
<td>• Notary (hash-stamping)</td>
<td>• Modular, support pluggable components at each layer</td>
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<td></td>
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<td>• Smart Contracts</td>
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<td>• Digital Assets</td>
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<td><strong>Consensus mechanism</strong></td>
<td>• Byzantine Fault Tolerant (trustless)</td>
<td>• Byzantine Fault Tolerant (trustless)</td>
<td>• Trust required</td>
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<td><strong>Access and Permission</strong></td>
<td>• Permissionless</td>
<td>• Permissionless</td>
<td>• Permissioned</td>
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<td></td>
<td></td>
<td>• There are permissioned derivatives</td>
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How are our clients responding?
Investors & leading industry players are focusing on Blockchain
There are strong concentrations on consortia to set standards in the market

Cost Savings
Predictions say Blockchain could reduce banks’ infrastructural costs by $15-$20 bn a year

Market movements
An increasing number of our key clients are joining consortia like R3 to investigate Blockchain or to set standards (Hyperledger)

Blockchain VC Investments are comparable to early investments in the Internet.
More than a billion dollars in VC has flowed to 120+ Blockchain-related startups

Venture Capital Investments
$1B+

VC Investment activity in Blockchain (in Mio $)

Blockchain 2014 $363
Internet 1995 $250
Blockchain 2015 $690
Internet 1996 $638
Blockchain Institute
Our vision and goals

Position Deloitte as the leading trusted partner of our clients in all areas impacted by the rise of Blockchain technology

Become the Center of Excellence for Blockchain technology in Deloitte Germany that builds the capabilities to advise our clients in the business, legal, tax risk, and audit impacts of Blockchain and to support them in all areas of its adoption.
Which scenarios should our clients and we prepare for?
Scenario Overview

Blockcracy

Survival of the biggest

One-eyed among the blind

Niche evolution

Trust in the established System

Technical Restrictions

There are no technical Restrictions

Technical Restrictions can not be solved

Institutions have lost the peoples trust

People have trust in the established System
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