Blockchain@IBM

Terminal Tag Berlin
Berlin, 09.11.17

Carsten Hiemsch
Practice Leader Blockchain DACH
Agenda

- Blockchain Basics
- Bitcoin and compensation in Blockchains
- Blockchain for the Freight & Logistics Industry
- IBM & Maersk
- Future impact of Blockchain
Blockchain in the press

"Blockchain is a disruptive technology and represents a great innovation..."

See also Dilbert Blockchain Cartoon: http://dilbert.com/search_results?terms=blockchain

IBM pushes Blockchain into the Supply Chain

IBM’s new service will help companies test online ledger technology to track high-value goods as they move through supply chains.
What is a Blockchain

Company A
B1: 0xDF4023
B2: 0xAE2411
B3: 0x6E45B1
Distributed Ledger

Company B
B1: 0xDF4023
B2: 0xAE2411
B3: 0x6E45B1
Distributed Ledger

Company C
B1: 0xDF4023
B2: 0xAE2411
B3: 0x6E45B1
Distributed Ledger

Company D
B1: 0xDF4023
B2: 0xAE2411
B3: 0x6E45B1
Distributed Ledger
Mathematical hashing

Checksum:

<table>
<thead>
<tr>
<th>Data 1</th>
<th>Data 2</th>
<th>Data 3</th>
<th>Checksum</th>
<th>Hash</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

Hashing Algorithm:

<table>
<thead>
<tr>
<th>Carsten Hiemsch</th>
<th>07.Aug</th>
<th>Data 1</th>
<th>Data 2</th>
<th>Data 3</th>
<th>Hash</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>07.Aug</td>
<td></td>
<td>00gfhTe3z6qaaf9</td>
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Why do we call it a “Blockchain”? 

Made up of a series of blocks added in chronological order 

```plaintext
40419240049f07bb11de8f22a44fbeb01fd0e848cc8cab1f36c4c02a467e544f
```
# Blockchain for auditing

<table>
<thead>
<tr>
<th>Type</th>
<th>Account</th>
<th>Product</th>
<th>Value €</th>
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</thead>
<tbody>
<tr>
<td>Credit</td>
<td>Bank</td>
<td>Screw</td>
<td>+175</td>
</tr>
<tr>
<td>Debit</td>
<td>Inventory</td>
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<th>Block Hash</th>
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<tbody>
<tr>
<td>235253</td>
<td>7zh776</td>
</tr>
<tr>
<td>7zh776</td>
<td>8hszw7</td>
</tr>
<tr>
<td>8hszw7</td>
<td>hszs99</td>
</tr>
<tr>
<td>hszs99</td>
<td>uhsz887</td>
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<tr>
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Problem..

... inefficient, expensive, vulnerable
Solution

Party D’s records

Party C’s records

Party A’s records

Shared, replicated, permissioned

Party B’s records

Bank records

Auditor records

... consensus, provenance, immutability, finality
Blockchain for Business...

Shared system of record. Permissioned visibility within own copy.

- **Shared ledger**
- **Privacy**
- **Consensus**
- **Smart contract**

Business terms embedded in transaction database & executed with transactions.

Ensuring appropriate visibility; transactions are secure, authenticated & verifiable.

All parties agree to network verified transaction.

... broader participation, lower cost, increased efficiency
How does Bitcoin work

- Aunt Ema
- Max
- Isabella
- George
- Erdi
- Mustermann GmbH
How does Bitcoin work

1. Aunt Ema receives the money from Max.
2. Aunt Ema verifies the transaction.
3. Aunt Ema sends money to George.
4. George verifies the transaction.
5. George sends money to Isabella.
6. Isabella verifies the transaction.
7. Isabella sends money to Mustermann GmbH.
8. Mustermann GmbH verifies the transaction.
9. Mustermann GmbH sends money to Erdi.
10. Erdi verifies the transaction.
Future Impact of Blockchain – creating environment for compensation of value creation

- Internet
- Cash
- Hotel A
- Hotel B
- Car Rental
- Airlines Miles
- Airline 1
- Airline 2

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1) PHYSICAL flow of goods/shipment
Documents, Track&Trace, Process status

2) FINANCIAL flow of goods/shipment
Settlement & Payment
Information Exchanges in the Trade Ecosystem

TODAY
- Peer to peer communication

Tomorrow
- Shared communication

Authority

Bank 1

Bank 2

Global Shared Infrastructure

Producer

Consignor

Forwarder

Carrier

Consignee

Declarant

Dispatcher

Terminal

Liner agent
Future impact of Blockchain in the F&L Industry

**SCM-Transparency**

Higher demands regarding Supply Chain accuracy and transparency
- real time
- Support provenance (batch tracking)
- IOT-integration

**New modes for Settlement and invoicing**

New mode of settlement between Business Partners for more
- transparency
- accuracy and
- dispute management

**Autonomous Payments**

IOT and assets taking over responsibility for paying services.
New services arising based on micropayments

**New forms of financial compensation**

Financial compensation shifting into new environments
Thank you!

Carsten Hiemsch
Associate Partner
Practice Leader Blockchain DACH
Email: chiemsch@de.ibm.com
Mobile: +49 160 368 9950