

# Blockchain: Automatisierung von Einkaufs- und Logistikprozessen

Procurement Summit 2020

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# Blockchain (Web 3.0) – Opportunities and Challenges

Digitization is unstoppable –  
is Blockchain just a passing hype or "**the next big thing**"?



New York 1903



New York 1913



Papstwahl 2005



Papstwahl 2013

How will  
the  
Blockchain  
change our  
world?

# Blockchain – Opportunities and Challenges

**Citibank CTO Amit Varma** praised the savings its bank expects from Blockchain technology for all players in every phase of world trade - from manufacturing to shipping to distribution.



## Varma predicts:

**“We expect to see a reduction of 70 percent to 80 percent in costs on supply chain management by using blockchain.”**

Source: <https://www.coinwire.com/bankers-agree-that-trade-finance-goes-well-with-blockchain>

# Maturity Model: Industry 4.0

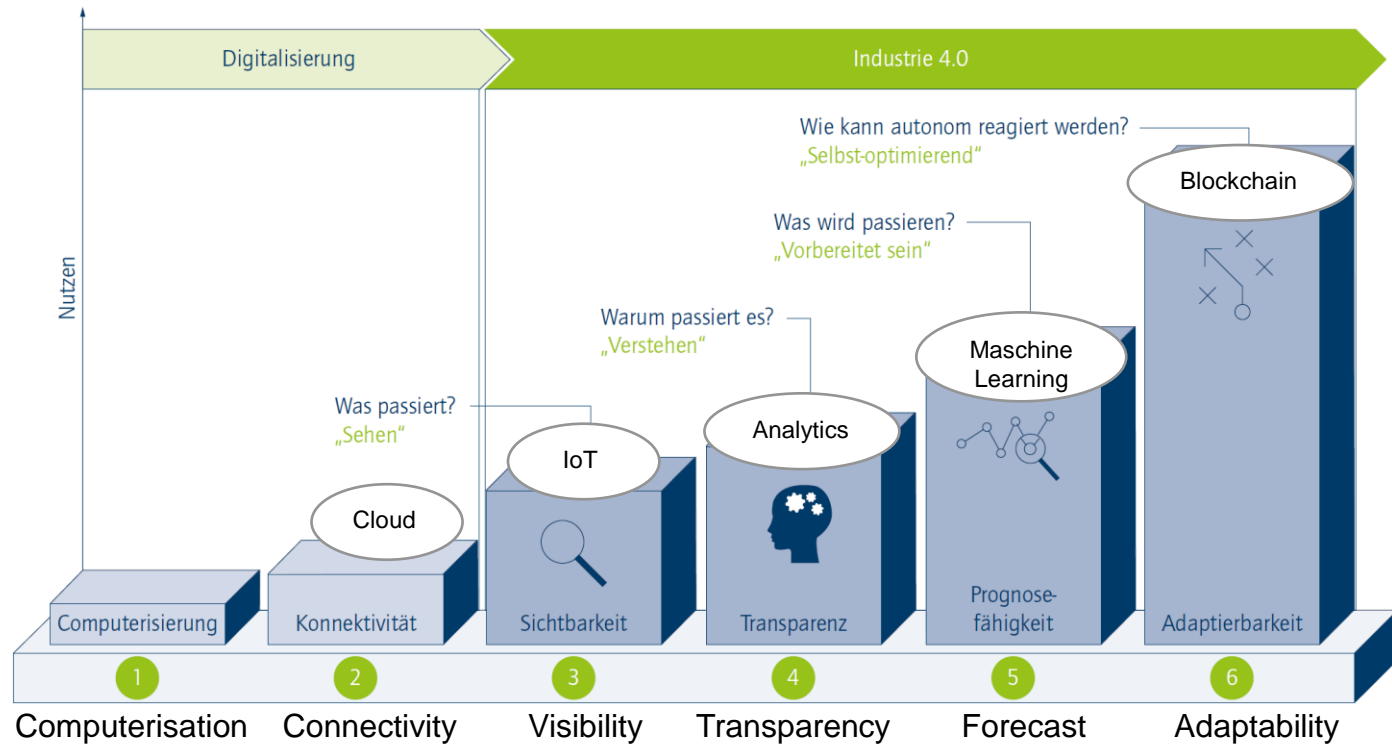
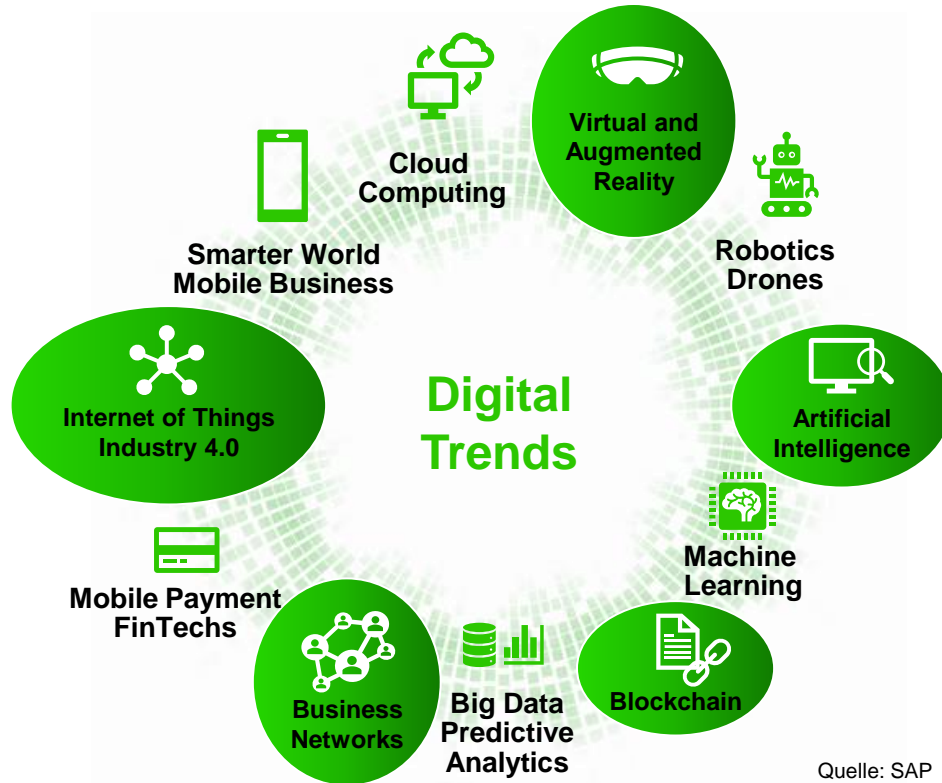


Abbildung 5: Stufen des Industrie 4.0-Entwicklungspfad (Quelle: FIR e. V. an der RWTH Aachen)

# Industry 4.0: Digitalization Technologies



Quelle: SAP

# What is Blockchain?

A **Blockchain** is a software architecture that supports **collaborative processes** around **trusted data** that is **shared** and **distributed** across organisational (and potentially national) boundaries.

Satoshi Nakamoto, 2008

## Bitcoin: A Peer-to-Peer Electronic Cash System

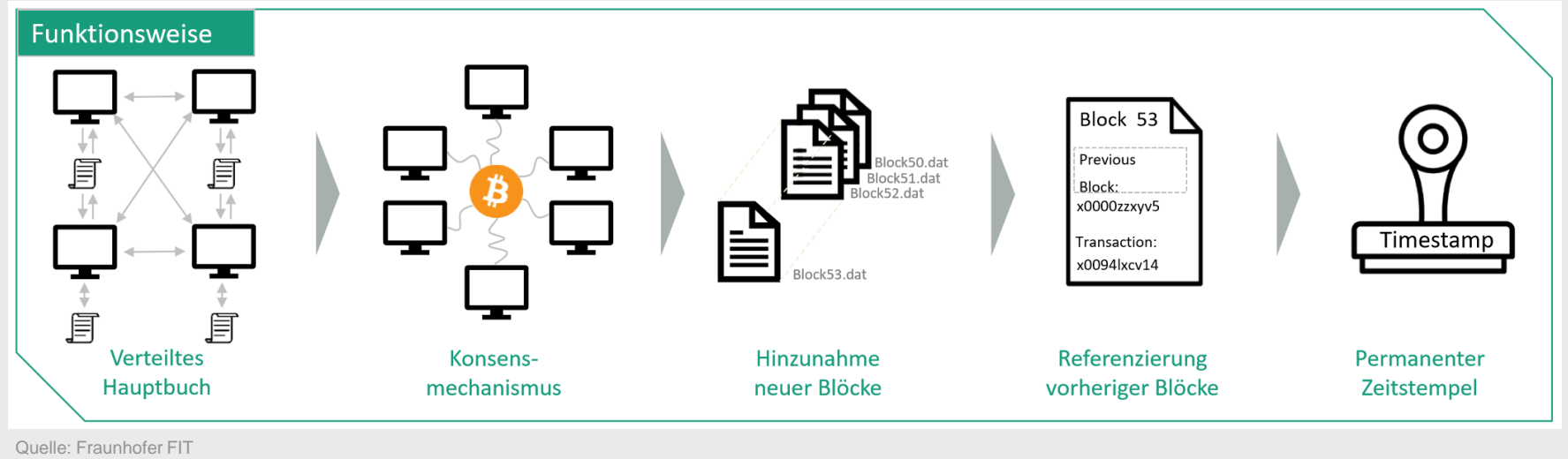
Satoshi Nakamoto  
satoshin@gmx.com  
www.bitcoin.org

**Abstract.** A purely peer-to-peer version of electronic cash would allow online payments to be sent directly from one party to another without going through a financial institution. Digital signatures provide part of the solution, but the main benefits are lost if a trusted third party is still required to prevent double-spending. We propose a solution to the double-spending problem using a peer-to-peer network. The network timestamps transactions by hashing them into an ongoing chain of hash-based proof-of-work, forming a record that cannot be changed without redoing the proof-of-work. The longest chain not only serves as proof of the sequence of events witnessed, but proof that it came from the largest pool of CPU power. As long as a majority of CPU power is controlled by nodes that are not cooperating to attack the network, they'll generate the longest chain and outpace attackers. The network itself requires minimal structure. Messages are broadcast on a best effort basis, and nodes can leave and rejoin the network at will, accepting the longest proof-of-work chain as proof of what happened while they were gone.

# What is Blockchain?

Constantly updated, chronologically ordered and publicly accessible registers with ownership and transaction information.

Cryptographic principles grant a retroactive immutability of the entries.



# Five Steps of Blockchain Innovations

Blockchain technology has been about information synchronisation and immediate transactions. It moves to the direction of platforms and ecosystems.

**DAOs\***

**Smart Contracts**

**Identity Management**

**Transfer of Assets**

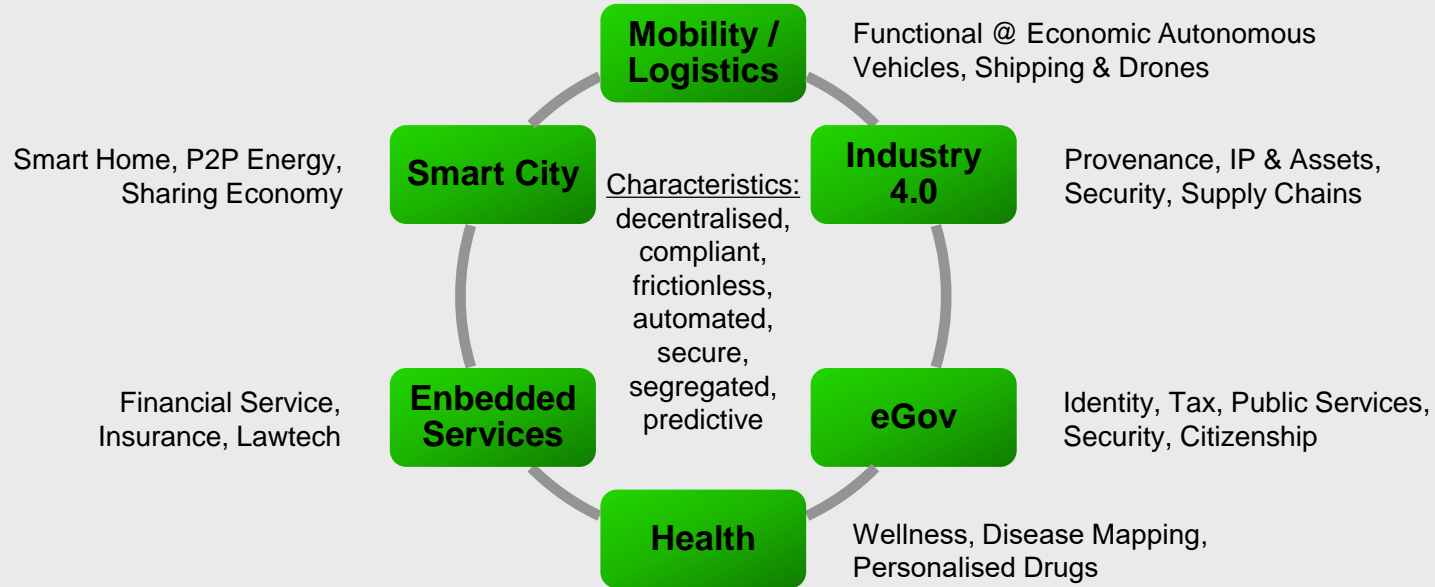
**Secure Data Management**



\*decentralized autonomous organization



# Application Fields of Blockchain Technology

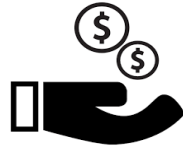


# Blockchain Use Cases

Blockchain solutions can solve existing problems or create new revenue streams.



More efficient and  
effective processes



Cost savings,  
cost avoidance



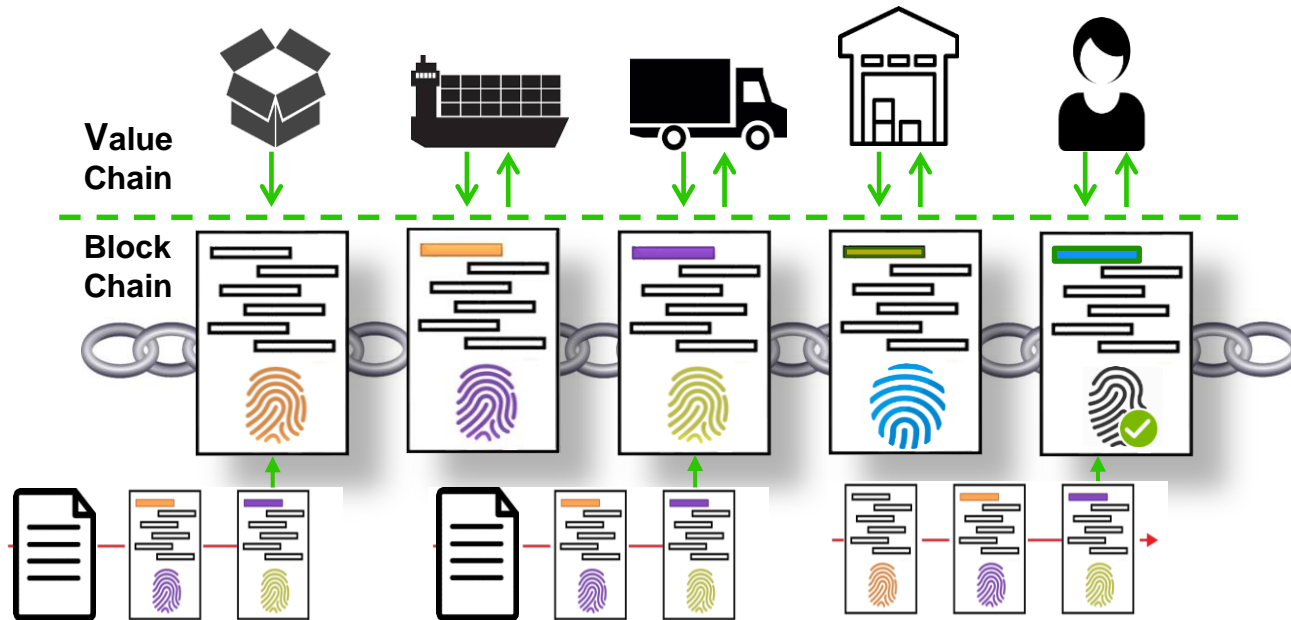
New business  
models and  
revenue streams

Solving an existing problem

Blockchain based systems can improve existing business and facilitate the development of new business models – but we need to design them first.

# Use Case: Secure Document Management

- Document ledger for enterprises to store data
- Secure collaboration between all value chain participants
- Documents - **Single Source of Truth**




# Use Case: Blockchain Platform called the Global Shipping Business Network (GSBN)

9 ocean carriers, terminal operat: x 9 ocean carriers, terminal operat: x (13) Blockchain in Supply Chains x | +

https://www.supplychaindive.com/news/ocean-carriers-new-blockchain-cosco-cma-cgm/541630/

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**BRIEF**

## 9 ocean carriers, terminal operators join new blockchain initiative to rival TradeLens

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11:59 19.11.2018

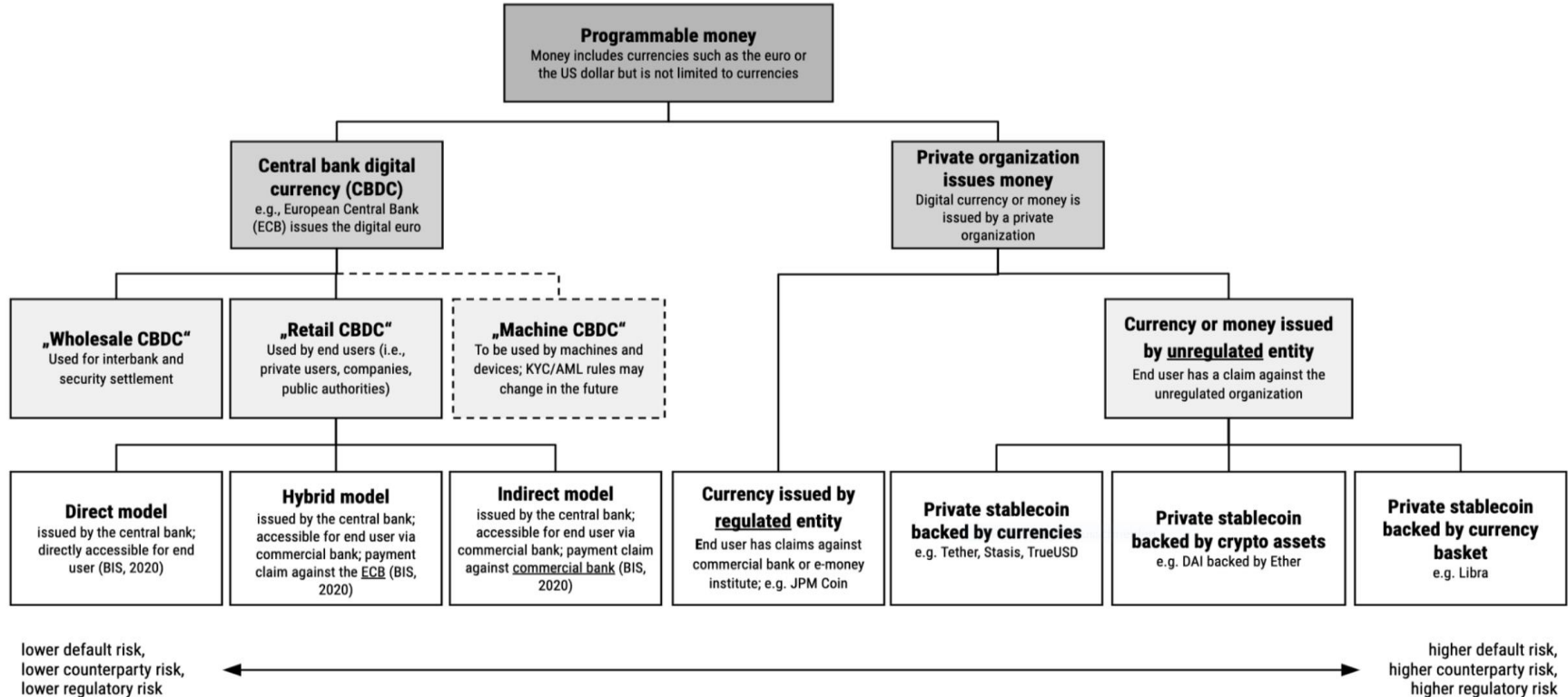
Quelle: <https://www.supplychaindive.com/news/ocean-carriers-new-blockchain-cosco-cma-cgm/541630/>

# Use Case: **Transfer of Assets**

- Money / Micro Payments
- Digital Shares - Initial Coin Offering (ICO) / Crowdfunding
- Music Rights / Patent Rights
- Real Estate / Property Register
- International Trade / Letter of Credit
- Supply Chain Financing



# Use Case: Transfer of Assets



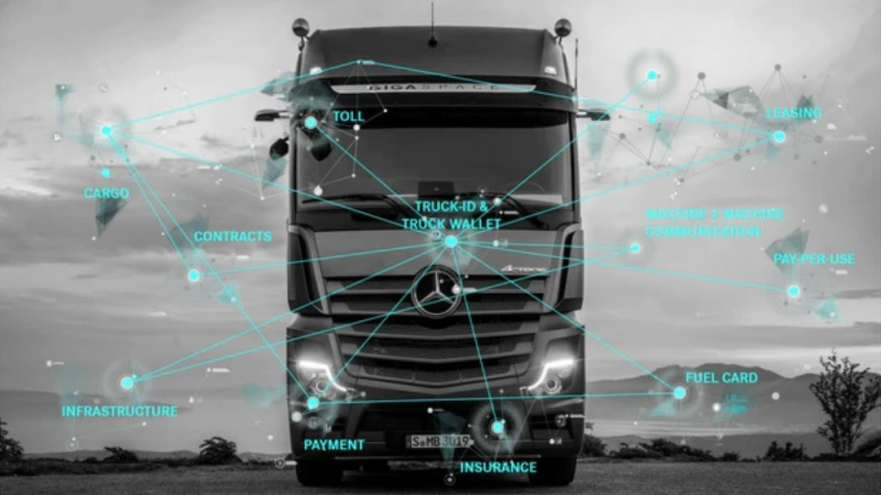
(Sandner/Klein/Gross, 2020)

Source: <https://medium.com/@philippsandner/how-will-blockchain-technology-transform-the-current-monetary-system-f98f9a6de013>

# Use Case: **Transfer of Assets**

## Blockchain: Daimler und Commerzbank testen automatisches Zahlen bei Lkws

Navigation: Home, Facebook, Twitter, WhatsApp, Pocket, E-Mail



**Jörn Brien**  
News-Redakteur

Verwandte Themen: Blockchain, Daimler, Apps, Smartphone, WLAN

Blockchain-Technologie für automatisches Bezahlen in Daimler-Lkws. (Foto: Daimler)

# Use Case: Identities

## Trusted Identity

Übergreifendes Identitätsframework für unterschiedliche Einsätze im Konzern



### Mobilitäts-ID



- Kunde benötigt **nur eine Identität** für die gesamte Reise
- **Adress- oder Kreditkartendaten** werden an einer einzigen Stelle verwaltet
- Kunde **entscheidet eigenständig**, welche Informationen weitergegeben werden
- Kunde bleibt **DB Kunde**

### Personen/Mitarbeiter-ID



- **MA-ID als Zugriffsberechtigung** zu IT-Systemen und internen Buchungssystemen
- **Interner, validierter Lebenslauf** mit bestätigten Erfahrungen und Kenntnissen
- Nutzung in **Recruiting- und Personalplanungssystemen** denkbar

### Asset- & Device-ID



- Asset-ID für die **Schließung von Verträgen untereinander für Dinge** (Bs. Zug verrechnet sich mit Bahnhof)
- **Identifikation und Autorisierung** von Sensoren und Devices

INTERNET OF EVERYTHING




# Use Case: M2M Identities

The screenshot shows a web browser window with the URL <https://de.cointelegraph.com/news/walmarts-latest-blockchain-patent-lets-robots-conduct-deliveries-across-supply-chain>. The article is by Helen Partz, dated 02 SEP 2018. The main headline is "Walmarts jüngstes Blockchain-Patent lässt Roboter Lieferungen über die Lieferkette durchführen". Below the headline, it shows 938 total views and 5 shares. The main image is a stylized illustration of a white robot in a white helmet holding a blue tablet, with yellow lines representing a blockchain network connecting various elements of a supply chain, including a truck and shipping containers. To the right of the article, there is an "EDITOR'S CHOICE" section with several news snippets. At the bottom right, there is a Freewallet advertisement with the text "Get simple and secure wallet" and a "Create now" button. The Windows taskbar at the bottom shows the date 19.11.2018 and time 12:34.


Blockchain in Supply Chains | XIN x Walmarts jüngstes Blockchain-Pa x (14) Blockchain in Supply Chains x +

← → ↻ 🔒 <https://de.cointelegraph.com/news/walmarts-latest-blockchain-patent-lets-robots-conduct-deliveries-across-supply-chain> ☆ 🔄 📄

Von  Helen Partz 02 SEP 2018

## Walmarts jüngstes Blockchain-Patent lässt Roboter Lieferungen über die Lieferkette durchführen

938 Gesamte Aufrufe 5 Gesamte Anzahl geteilt




EDITOR'S CHOICE

- Die Schweizer Aktienbörse Six listet weltweit ersten Krypto-ETP inmitten von Marktkollaps
- Studie: Leistungswerte der ICOs im Q3 2018 „insgesamt enttäuschend“
- Ripple setzt Rebound fort, die meisten Top-Kryptowährungen verzeichnen milde Verluste
- Bloomberg Analysten: "Bitcoin ist nicht langweilig", Kurs geht in Richtung 1.300 €
- Bilbao startet 150.000 Euro Ausschreibung zur Entwicklung eines Blockchain-Netzwerks aus

Freewallet

**Get simple and secure wallet**

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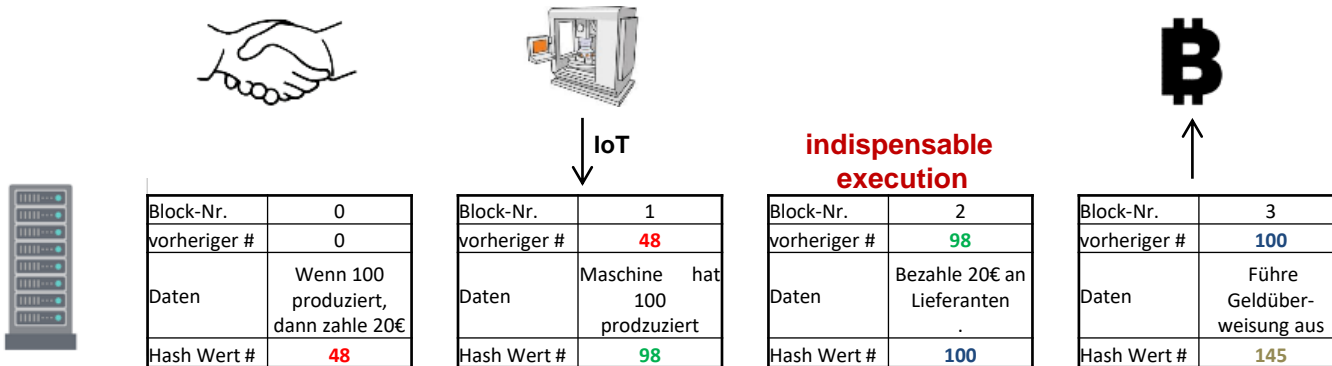
12:34 19.11.2018

Quelle: <https://de.cointelegraph.com/news/walmarts-latest-blockchain-patent-lets-robots-conduct-deliveries-across-supply-chain>

# Use Case: Smart Contracts

## Was ist ein Smart Contract?

- Ein „Smart Contract“ ist eine nicht unabdingbare **"WENN - DANN"** Ausführung.
- Beispielsweise schreiben Kunde und Lieferant die Vertragsbedingungen in die Blockchain.
- So können ganze Regeln zu autonomen Systemen aufgebaut werden.



## Use Case: **Smart Contracts in Supply Chains**

# Port of Rotterdam tests blockchain to link container logistics and payments



Quelle: <https://www.supplychaindive.com/news/Rotterdam-blockchain-test-digital-booking/540342/>

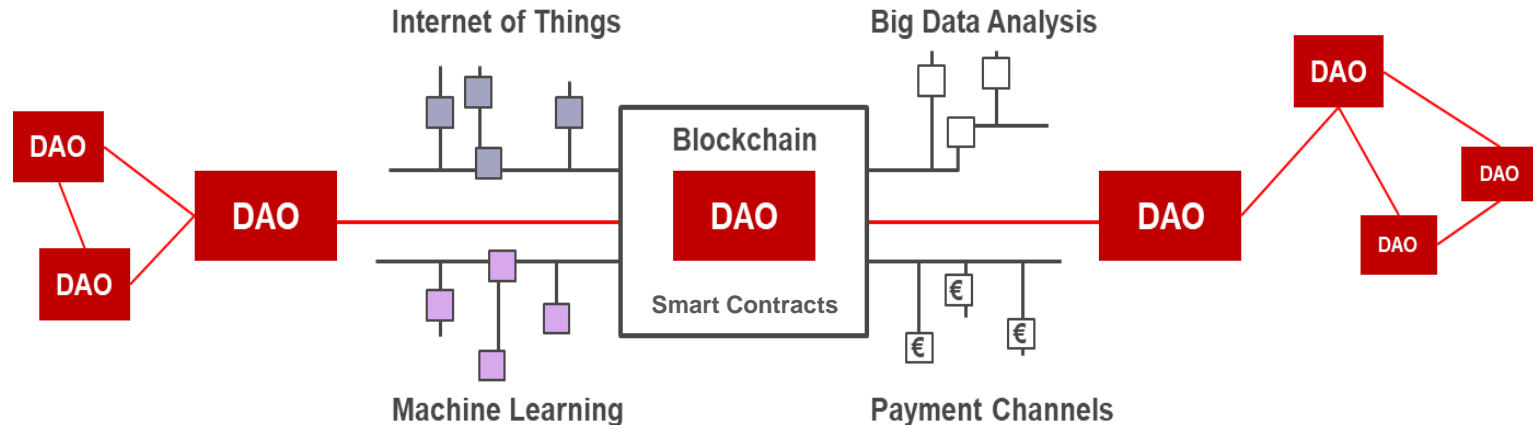
# Use Case: Decentralised Autonomous Organisation (DAO)?

Eine DAO ist eine virtuelle unabhängige dezentrale Organisation, die in der Blockchain initiiert und betrieben wird.

Eine DAO läuft wie ein Programm, hat Geld und vorgegebene Ziele.

Die DAO ist so programmiert, dass sie nach verschiedenen Parameter optimiert: Ertrag, Nutzung, Prestige, Gewinn, ...

Das DAO besteht aus einer komplexen Struktur von "Smart Contracts".



# Relevant Blockchain Use Cases

<b>Track &amp; Trace</b>	Sustainability Tracking	Compliance Tracking	Authenticity Tracking	Digital Twin	Transport Tracking	Condition Monitoring
<b>Prediction</b>	Sales Predictions	Transport Planning	Stock Level Planning	Maintenance	Supply Chain Financing	CAPA
<b>Data Management</b>	Tamper Proof Data	Certificates	Shipping Documents	Quality Reports	Drawings	
<b>Communication</b>	Mobility Platforms	B2C Data Exchange Platform	B2B – Market Places	Confidential, i.e. Healthcare		
<b>Process Automation</b>	Conflict Resolution	Product Recalls	Permit Evidence	Procurement, SCM + Transport	Manufacturing, M2M	Invoicing and Controlling
<b>Crypto Currency</b>	Crypto Payment Channels	Micro Payments	Pay per Use Business Models	Finance / ICO		
<b>Customer Engagement</b>	Consumer feedback platform	Product Individualisation	Customer Profile Tracking	Co-Creation		

# Summary: Benefits of Blockchain Technology

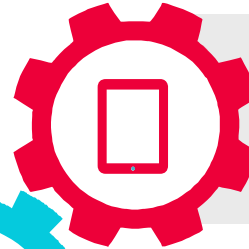
## Reduces Costs

Eliminating manual processes for instance administrative costs



## Reduces Risk

Of single points of failure and attack through distributed network and nodes, no single point of trust



## Reduces Fraud

Time-stamping entries and sharing ledger across network



## Increases Efficiency

Machine testing with smart contracts



# Please Join Our Discussion Groups

We run lively networks on the subject of “Blockchain in Digital Supply Chains”.

What’s in for you?

- trends and insights
- knowledge transfer
- best practice and use cases



## XING Community

<https://www.xing.com/communities/groups/blockchain-in-supply-chains-7bcd-1099296>



## LinkedIn Community

<https://www.linkedin.com/groups/8630987>

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