TeleTrusT-Informationstag "Blockchain"

Frankfurt a.M., 13.07.2017

Blockchain-basiertes Supply Chain Management
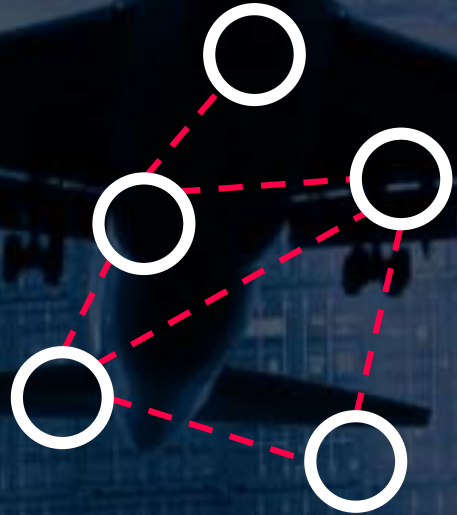
Sebastian Stommel, CryptoTec AG

Agenda

1. Bedrohungslage bei Supply Chains
2. Anwendungsfälle für Blockchain
3. Ausblick

July 13, 2017
Sebastian Stommel

Vulnerable Supply Chains

- Isolated solutions
- No global interoperabilty
  › Vulnerable to attack and counterfeiting

- Open to counterfeiting
  - Revenue losses for manufacturers and traders
  - Damages to patients' health

Counterfeiters' Strategies

- Packaging
  - Reproduction of packaging
  - Theft of disposed original packaging

- Medications
  - With no active ingredient
  - With low levels of active ingredients
  - Contain substitutes with no confirmed effects
  - With substitute ingredients damaging to health

Counterfeit and Product Piracy adds up …

In some regions of Asia, Africa and Latin America up to **30% of pharmaceuticals** in circulation are **counterfeit**

Global trade of counterfeited goods reaches **$1.8 trillion** in 2015 (> 2% of global GDP)

> **50%** of online pharmaceutical vendors are **selling counterfeit drugs**

Global trade for counterfeit **pharmaceuticals** reaches **$200 billion**

Up to **1 million** **patients die annually** from toxic counterfeit pharmaceuticals

24 HRS

Trends in global Supply Chains

Trends in SCM:

- **Fragmentation of supply chains**
- **Just-in-Time / time critical planning**
- **Digitalisation and integration of production and logistics processes**

Trends in the surrounding field:

- **Shortening of product life cycles**
- **Exposure to global market developments**
- **Increasing terrorism and org. crime**

Increasing vulnerability of material and information flows

Increasing uncertainties and new challenges for SCM

Global Business Risks 2017

Top 10 Global Business Risks for 2017

To see full Risk Barometer 2017 Rankings click here »

Business interruption
(incl. supply chain disruption and vulnerability)
37% ◀▶ 2016: 38% (1)
1

Market developments
(volatility, intensified competition/ new entrants, M&A, market stagnation, market fluctuation)
31% ◀▶ 2016: 34% (2)
2

Cyber incidents
(cyber crime, IT failure, data breaches, etc.)
30% ◀▶ 2016: 28% (3)
3

Natural catastrophes
(e.g. storm, flood, earthquake)
24% ◀▶ 2016: 24% (4)
4

Source: http://www.agcs.allianz.com/assets/PDFs/Reports/Allianz_Risk_Barometer_2017_EN.pdf

New age of cyber security threats

Overcoming the security limitations of firewalls, VPN and AV
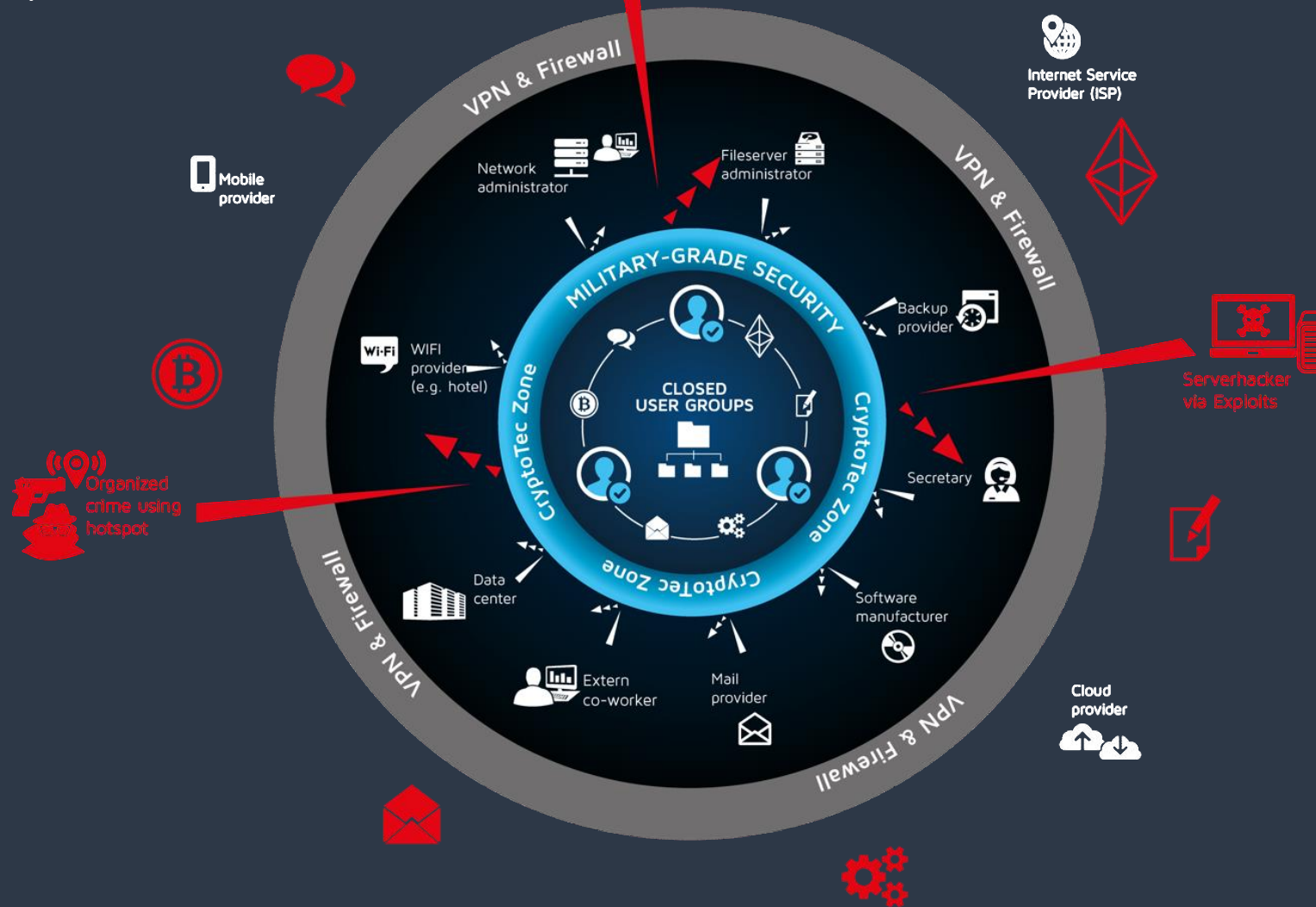
Blockchain = Protection of…

Availability	Confidentiality	Integrity	Authenticity
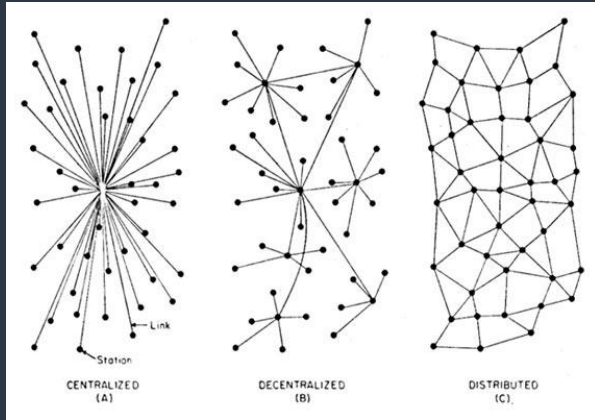
Availability
Massive Distribution
No single point of failure

Confidentiality
Encryption
CryptoTec CryptoSync®

Integrity
Digital Signatures

Authenticity
Digital Identities
Public Key Infrastructures

Supply Chain: High Performance Private Ledger

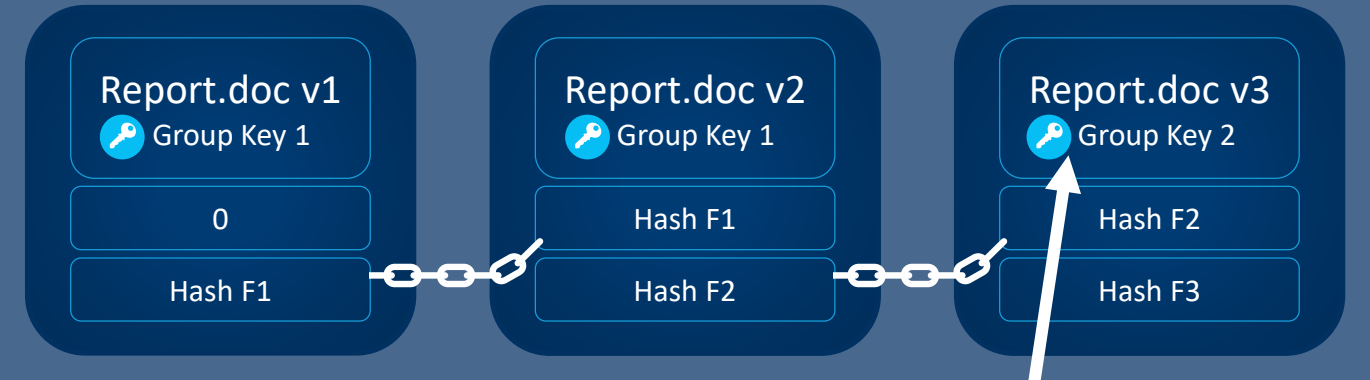End-to-end encrypted Supply Chain Solutions with Blockchain technology

Features
- Confidential storage and transmission
- Manipulation protected history
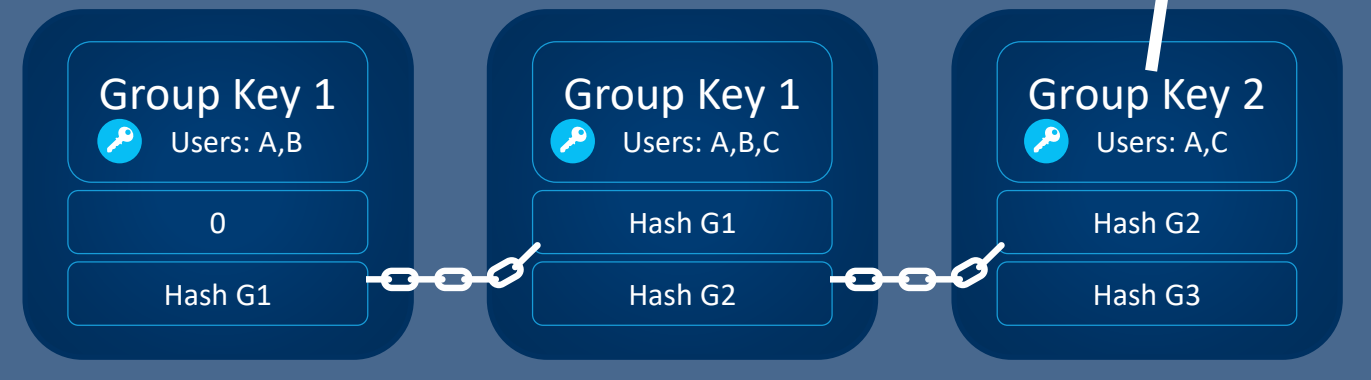- Scaling and performance through private ledger

Use cases
- Supply Chain Tracking
- Secure Data Storage
- Tracking Intellectual Property

File version ledger

Report.doc v1	Report.doc v2	Report.doc v3
🔑 Group Key 1	🔑 Group Key 1	🔑 Group Key 2
0	Hash F1	Hash F2
Hash F1	Hash F2	Hash F3

Permission ledger

Group Key 1	Group Key 1	Group Key 2
🔑 Users: A,B	🔑 Users: A,B,C	🔑 Users: A,C
0	Hash G1	Hash G2
Hash G1	Hash G2	Hash G3

CryptoTec
BLOCKCHAIN TECHNOLOGIES

BlockChain@Supply Chain

- **Shared database access**

- **Operational resilience, speed**

- **Records and transfer of ownership**

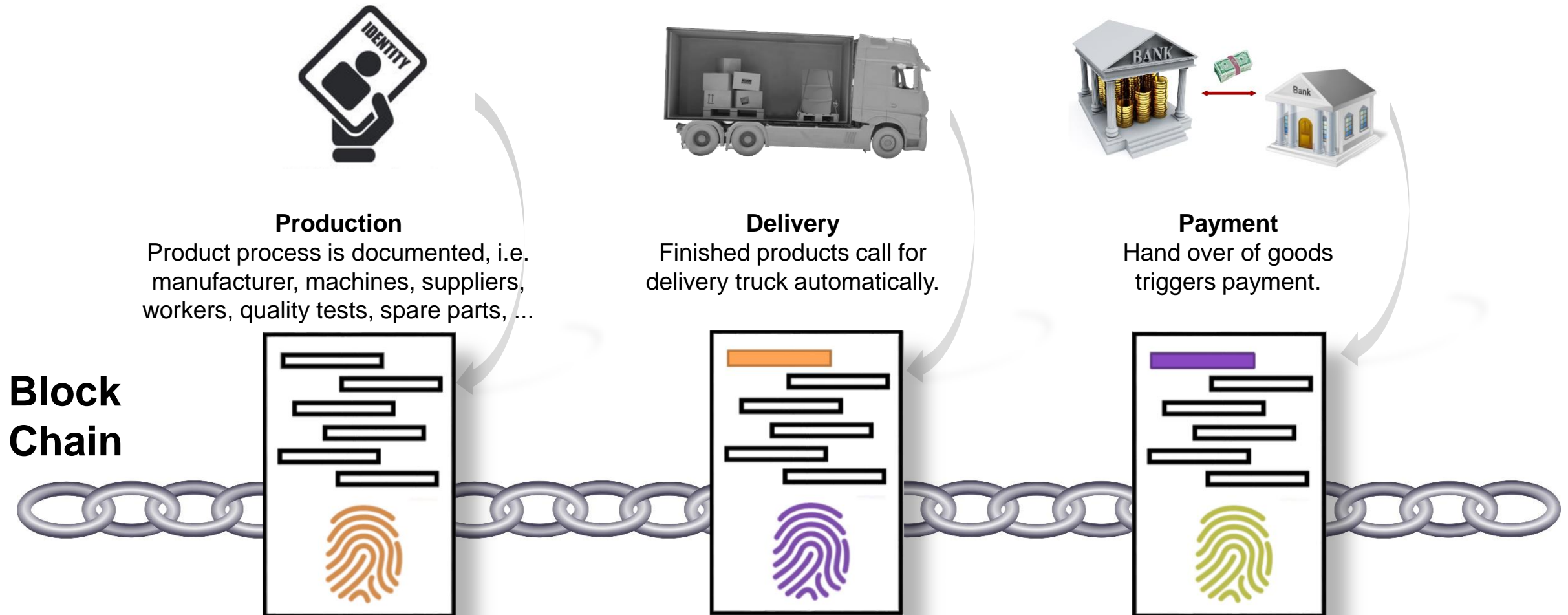- **Automatic business rule execution (smart contracts and smart objects)**

Use Case: Check of Authenticity of Products

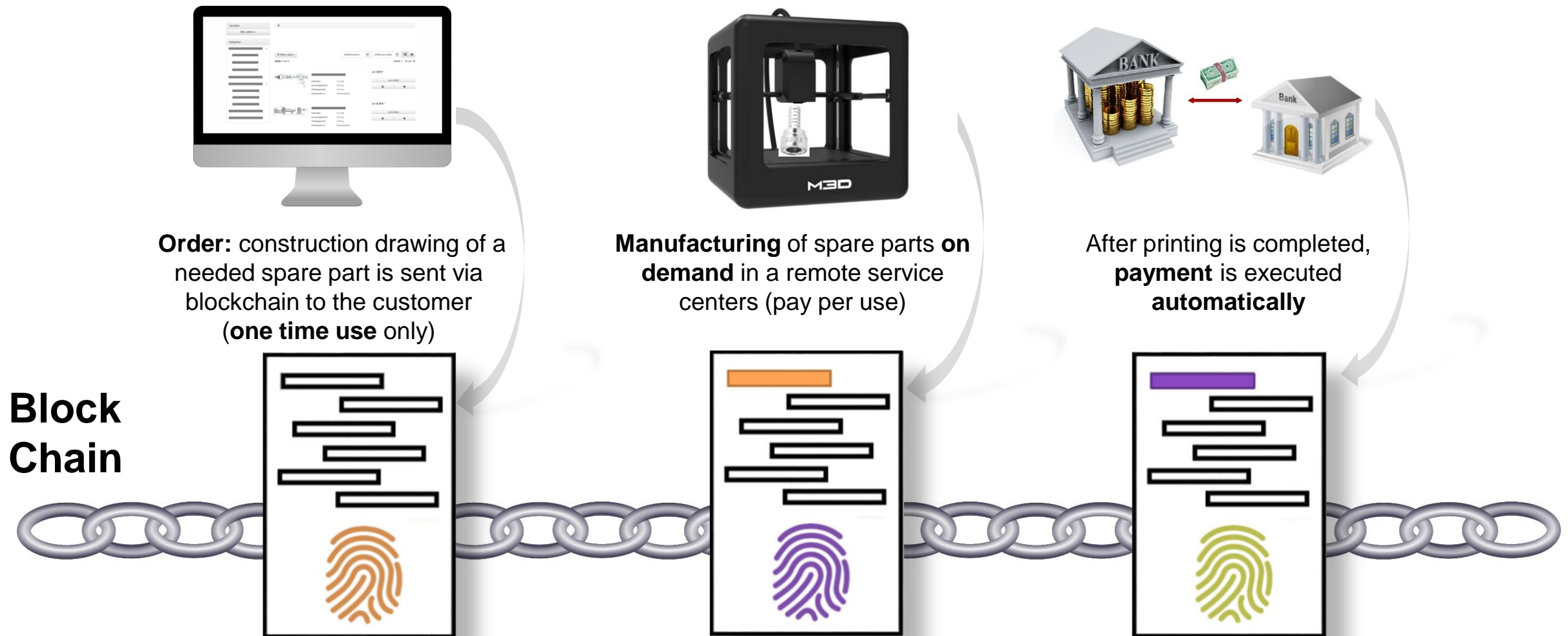**Supply Chain**

Block Chain
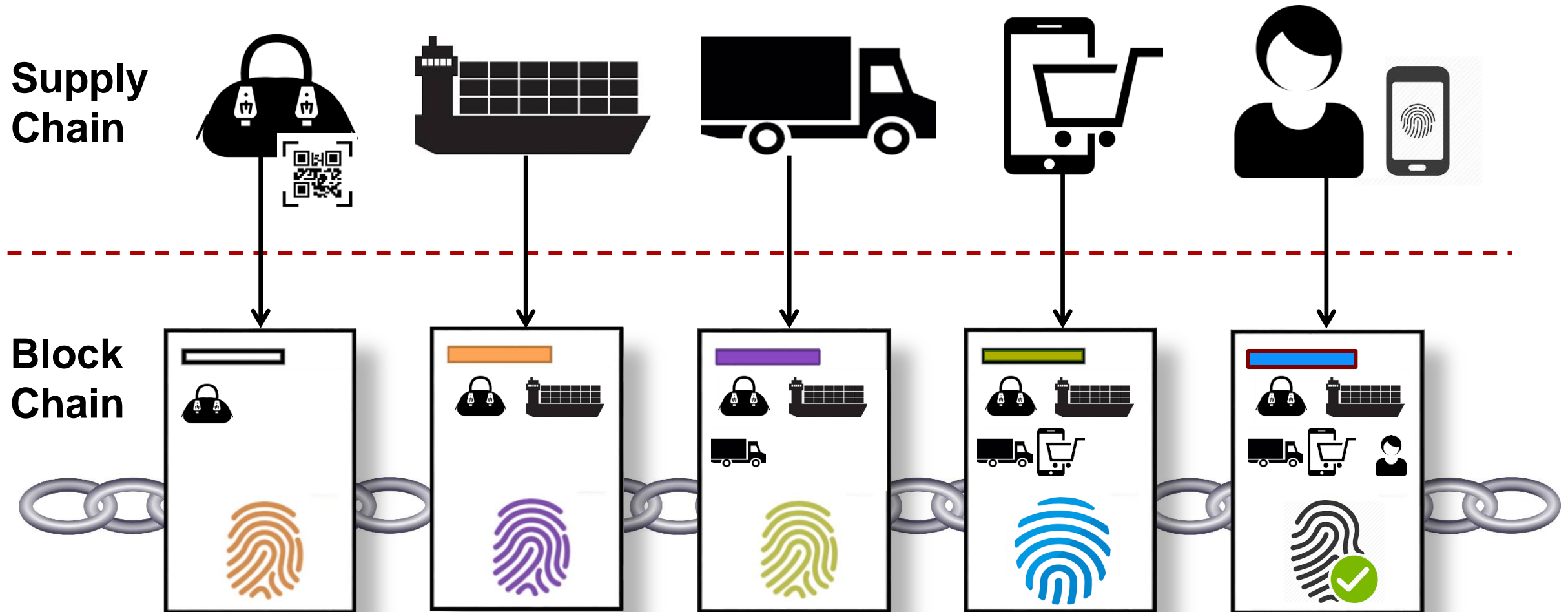
Use Case: Smart Contracts in Logistics

Smart contracts are simply computer programs that act as agreements where the terms of the agreement can be preprogrammed with the ability to self-execute and self-enforce itself.

Block Chain

Production
Product process is documented, i.e. manufacturer, machines, suppliers, workers, quality tests, spare parts, ...

Delivery
Finished products call for delivery truck automatically.

Payment
Hand over of goods triggers payment.

Use Case: Protecting Intellectual Property (3D printing)

Order: construction drawing of a needed spare part is sent via blockchain to the customer (**one time use** only)

Manufacturing of spare parts **on demand** in a remote service centers (pay per use)

After printing is completed, **payment** is executed **automatically**

Block Chain

BlockChain@SupplyChain Benefits

- **Removes Costs:** Overheads and cost intermediaries

- **Saves Time:** Transaction time from days to near instantaneous

- **Reduces Risk:** Tampering, fraud & cyber crime

- **Increase Trust:** Through shared processes and recordkeeping

BlockChain: Specific Application for Supply Chain Management

Record of waste disposal

Recall management

Qualification certificates

Remote control of IoT

Track&Trace

Pay per use

Documentation of decision processes

Concurrent ingeneering

Negotiation with suppliers

Connectivity of IoT, i.e.3D-Printing

Record keeping of test reports

Keeping audit trails
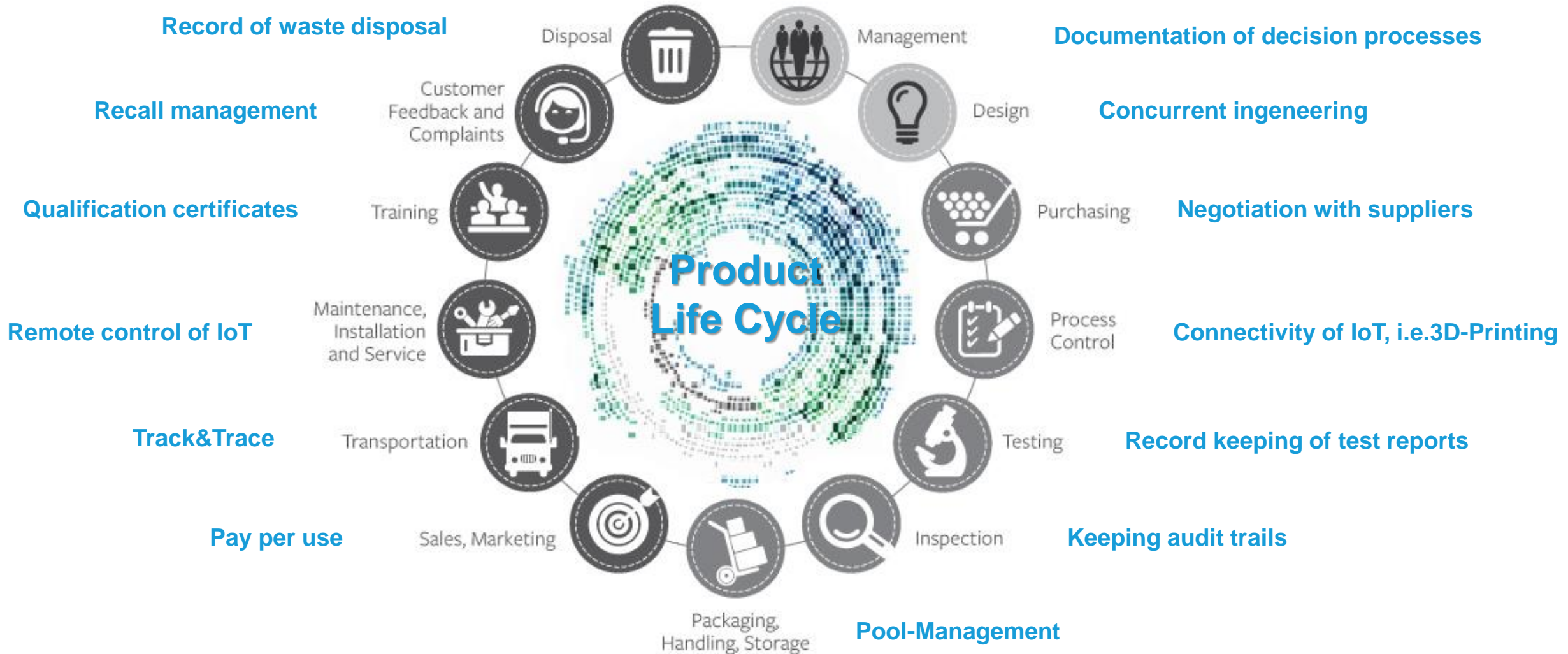
Pool-Management

What about Your Business?

Blockchain is coming to your neighborhood as well…

Food

Arts

Consumer electronics

Elastic pricing & automated payment

3D printing & mass customization

Energy

Spare parts for automotive

Secure data & transfer and storage

Luxury

Fashion

Solution Space
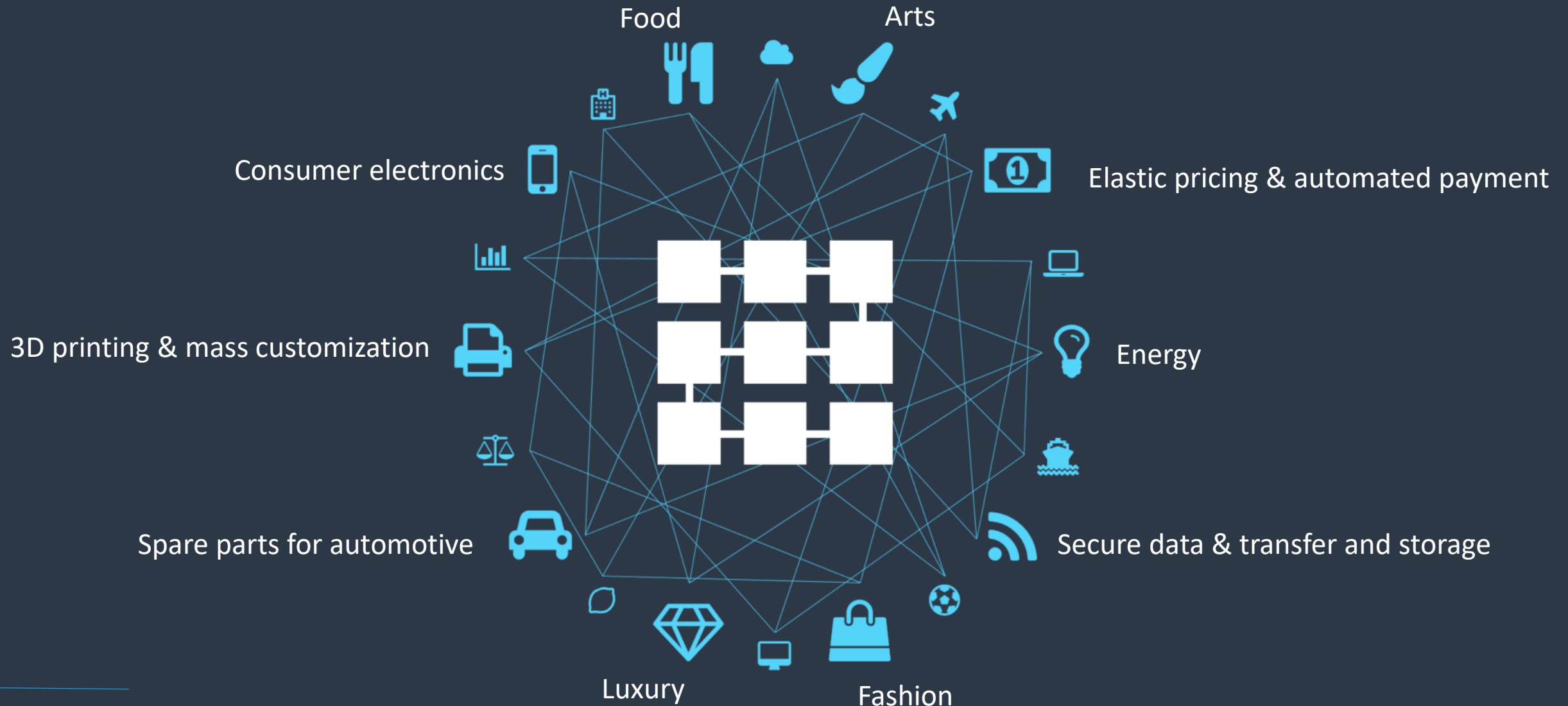
Blockchain Design

- Open/Permissioned, Public/Private
- Consensus protocol
- Platform

Enterprise Integration

- Identity Management
- Linking physical objects and digital IDs
- Alignment of Incentives

Blockchain

A strong tool to secure every business and every supply chain

Danke für Ihre Aufmerksamkeit,

Zeit für Fragen!

Sebastian Stommel

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