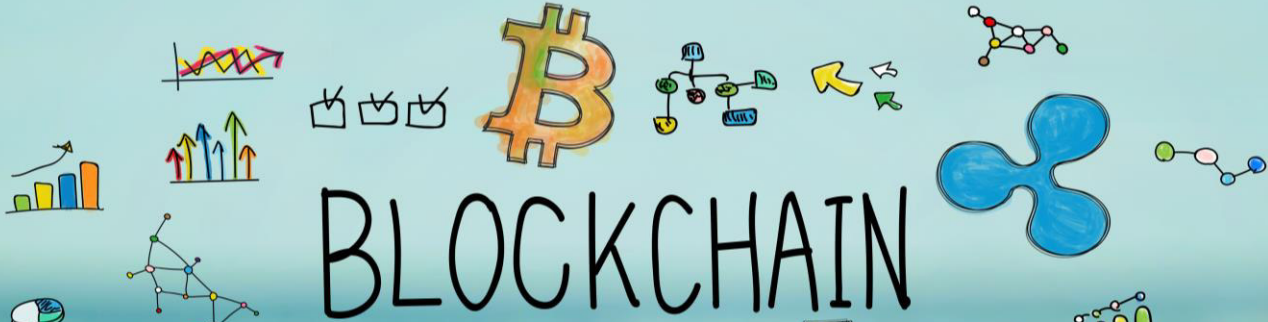




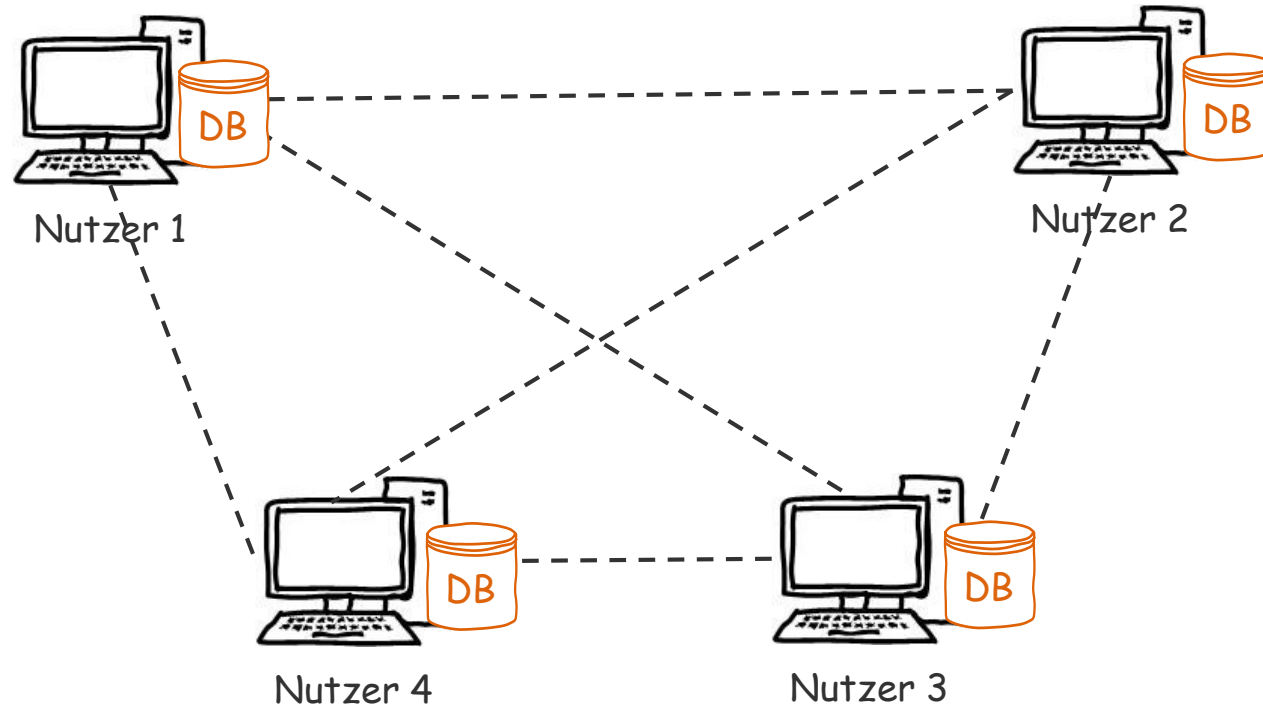
BLOCKCHAIN

Blockchain-Technologie
Projekte und Einsatzbereiche in Cloud und IoT

Prof. Dr. Christoph Meinel, Tatiana Gayvoronskaya

Blockchain:

Projekte in Cloud und IoT: Verteilte Datenbank



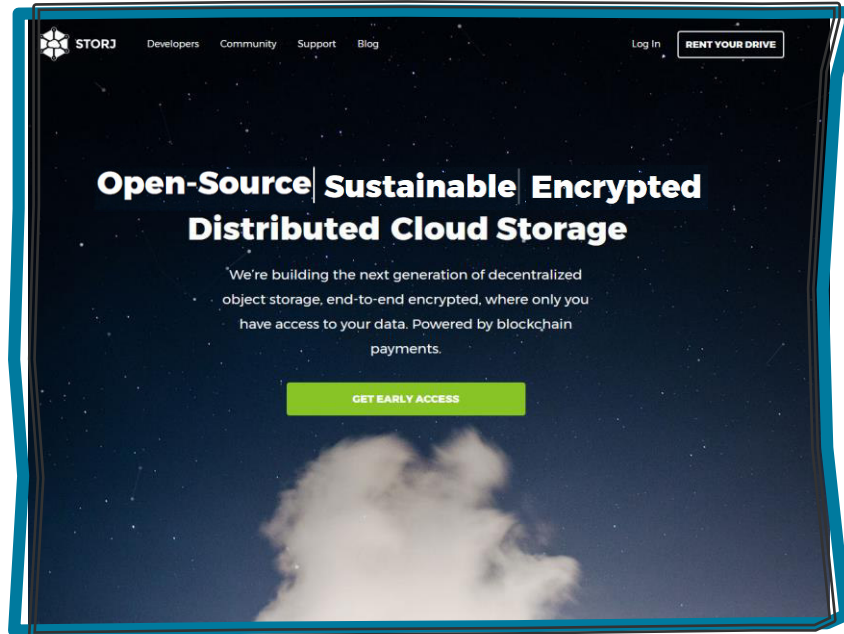
Blockchain: Hype oder Innovation?

10.3. Cloud & IoT

Prof. Dr. Ch. Meinel,
T. Gayvoronskaya

Blockchain: Projekte in Cloud und IoT: Cloud-Lösungen

Cloud-Speicher



Cloud-Computing

ORACLE® Cloud



Microsoft Azure



**Blockchain: Hype
oder Innovation?**

10.3. Cloud & IoT

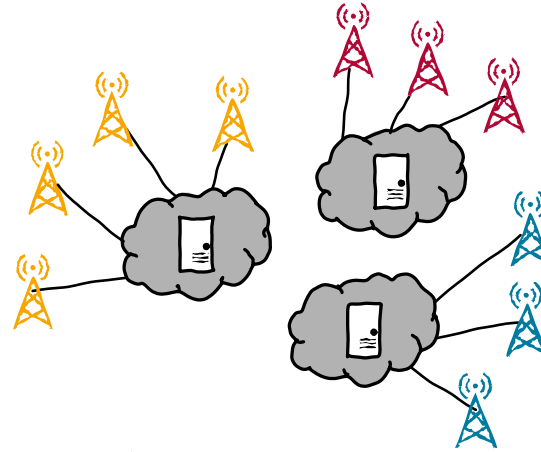
Prof. Dr. Ch. Meinel,
T. Gayvoronskaya

Blockchain:

Projekte in Cloud und IoT: Internet of Things

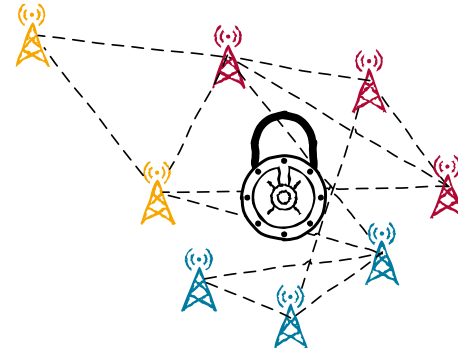
Aktuell:

- unterschiedliche Cloud-Infrastrukturen,
- keine gemeinsame Plattform, über die sich alle smarten Geräte verbinden.



Notwendig:

- sicherer P2P-Datentransfer,
- robuste und skalierbare Form des Geräte-managements .



Blockchain: Hype oder Innovation?

10.3. Cloud & IoT

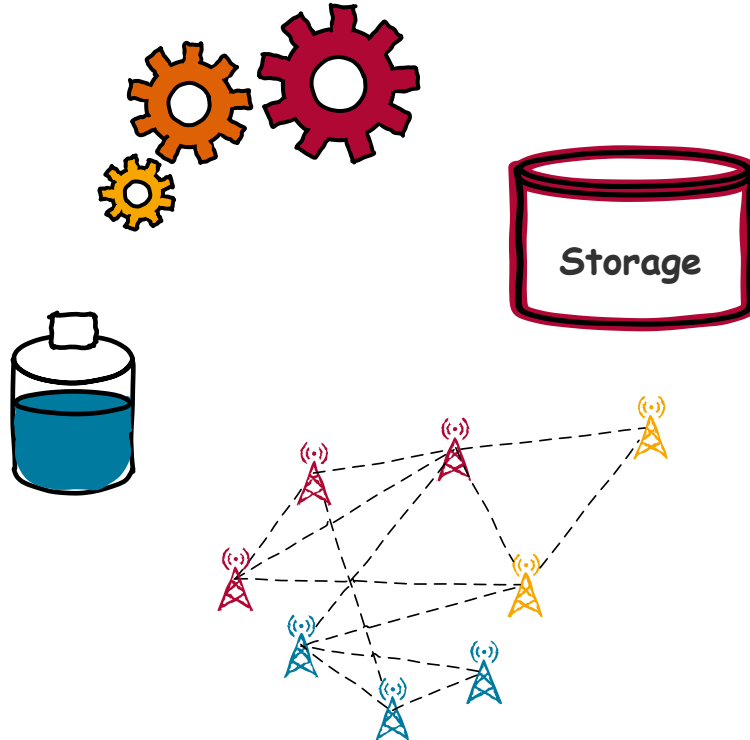
Prof. Dr. Ch. Meinel,
T. Gayvoronskaya

Blockchain:

Projekte in Cloud und IoT: Internet of Things

Herausforderungen:

- Rechenleistung,
- Speicherkapazität,
- geringe Akkuleistung,
- Skalierbarkeit,
- Transparenz.



Möglichkeiten:

- Kostenersparnis,
- Ausfallsicherheit,
- Datenintegrität.

Blockchain: Hype oder Innovation?

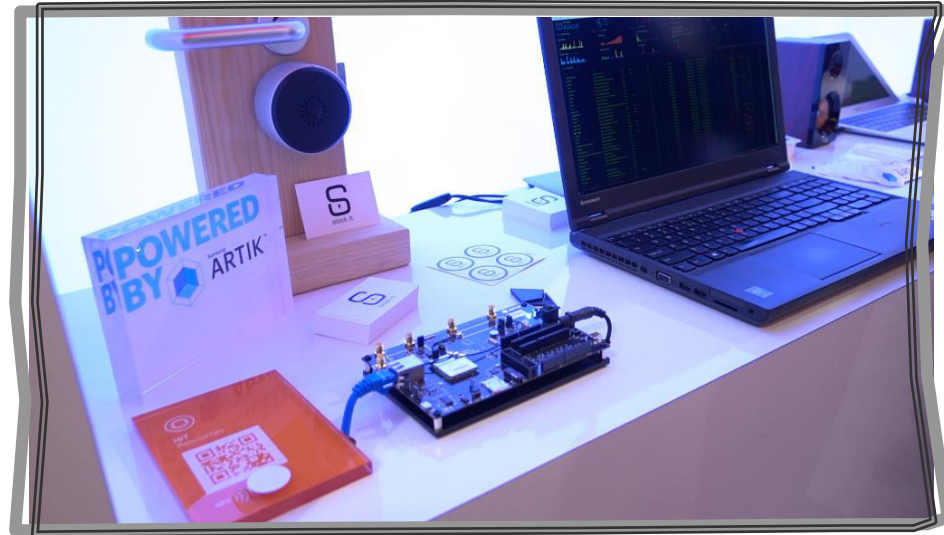
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T. Gayvoronskaya

Blockchain: Projekte in Cloud und IoT: IoT-Lösungen (1)



The Ethereum Computer



Blockchain: Hype oder Innovation?

10.3. Cloud & IoT

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T. Gayvoronskaya

Seite 6

Blockchain: Projekte in Cloud und IoT: IoT-Lösungen (1)

FREE AND OPEN SOURCE INFRASTRUCTURE

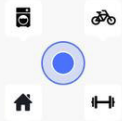
Tomorrow's Internet of Value

We're currently developing the Universal Sharing Network (USN), an open source infrastructure on which blockchain applications modules can be deployed. Our Open Platform will make it easy for 3rd parties including manufacturer, small or large, to onboard any object to the USN, without having to 'ask permission'.



USN Registry

- Uses ENS
- supportsInterface()
- Access control smart objects



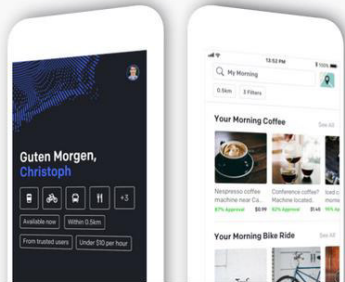
Access Control Smart Contracts

- Rent, sell and share
- Book (now or in the future)
- PAYU (payment channels)
- Whitelist friends or family



Access Control

- Ethereum light client
- Home automation
- USN lib



Mobile Apps

- Manage keys
- Discovery (map, filter)
- Rent/return transaction



Device/Lock

- Open/close command
- Power on/off command

Blockchain: Hype oder Innovation?

10.3. Cloud & IoT

Prof. Dr. Ch. Meinel,
T. Gayvoronskaya

Blockchain:

Projekte in Cloud und IoT: IoT-Lösungen (2)

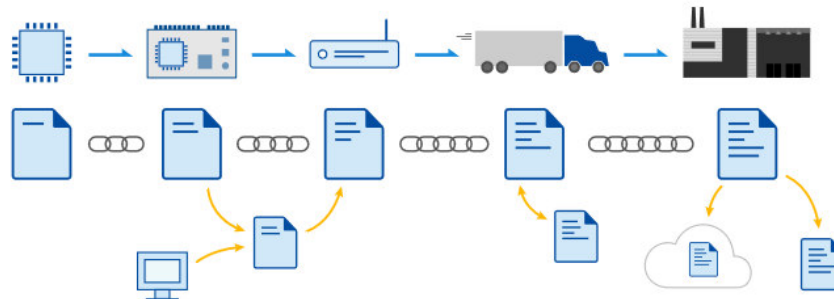


Hardware

Our new Blocklet Chip™ is a low cost, IoT-optimized Trusted Execution Environment with a small footprint and less than coin-cell power requirements.

Software

Our Blocklet™ software is a secure contract system designed for embedded devices. It manages a cryptographic chain-of-custody all the way from individual components through printed circuit board (PCB) assembly, product manufacturing, delivery to customers, and on-site provisioning.



Blockchain: Hype oder Innovation?

10.3. Cloud & IoT

Prof. Dr. Ch. Meinel,
T. Gayvoronskaya

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Blockchain:

Projekte in Cloud und IoT: IoT-Lösungen (2)



FILAMENT



Security

We use modern cryptographic protocols and defense in depth to help ensure that information is not disclosed to unauthorized entities and not modified in an unauthorized or accidental manner.



Privacy

Our privacy-enhancing techniques help to prevent attackers from learning information about device interactions.



Autonomy

Devices can independently derive trust and transact value at the edge of the network.



Decentralization

Remote locations and private networks are straightforward with Filament technologies.



Exchange

Value can be exchanged between devices in the form of data, network access, currencies such as Bitcoin, compute cycles, contracts for ongoing service, trusted introductions to other devices, and more.

**Blockchain: Hype
oder Innovation?**

10.3. Cloud & IoT

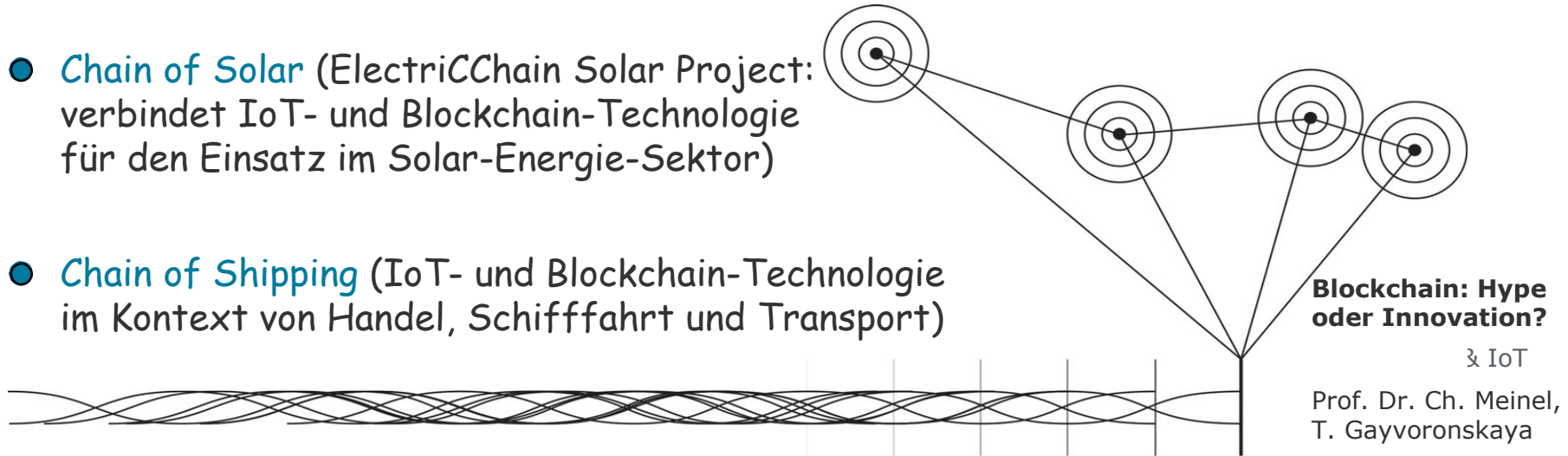
Prof. Dr. Ch. Meinel,
T. Gayvoronskaya

Seite 7

Blockchain: Internet of Things mit Blockchain Konsortium



- **Chain of Security** (sichere IoT-Anwendungen)
- **Chain of Solar** (ElectriCChain Solar Project: verbindet IoT- und Blockchain-Technologie für den Einsatz im Solar-Energie-Sektor)
- **Chain of Shipping** (IoT- und Blockchain-Technologie im Kontext von Handel, Schifffahrt und Transport)



Blockchain: Internet of Things mit Blockchain Kooperation



**Blockchain: Hype
oder Innovation?**

10.3. Cloud & IoT

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T. Gayvoronskaya

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