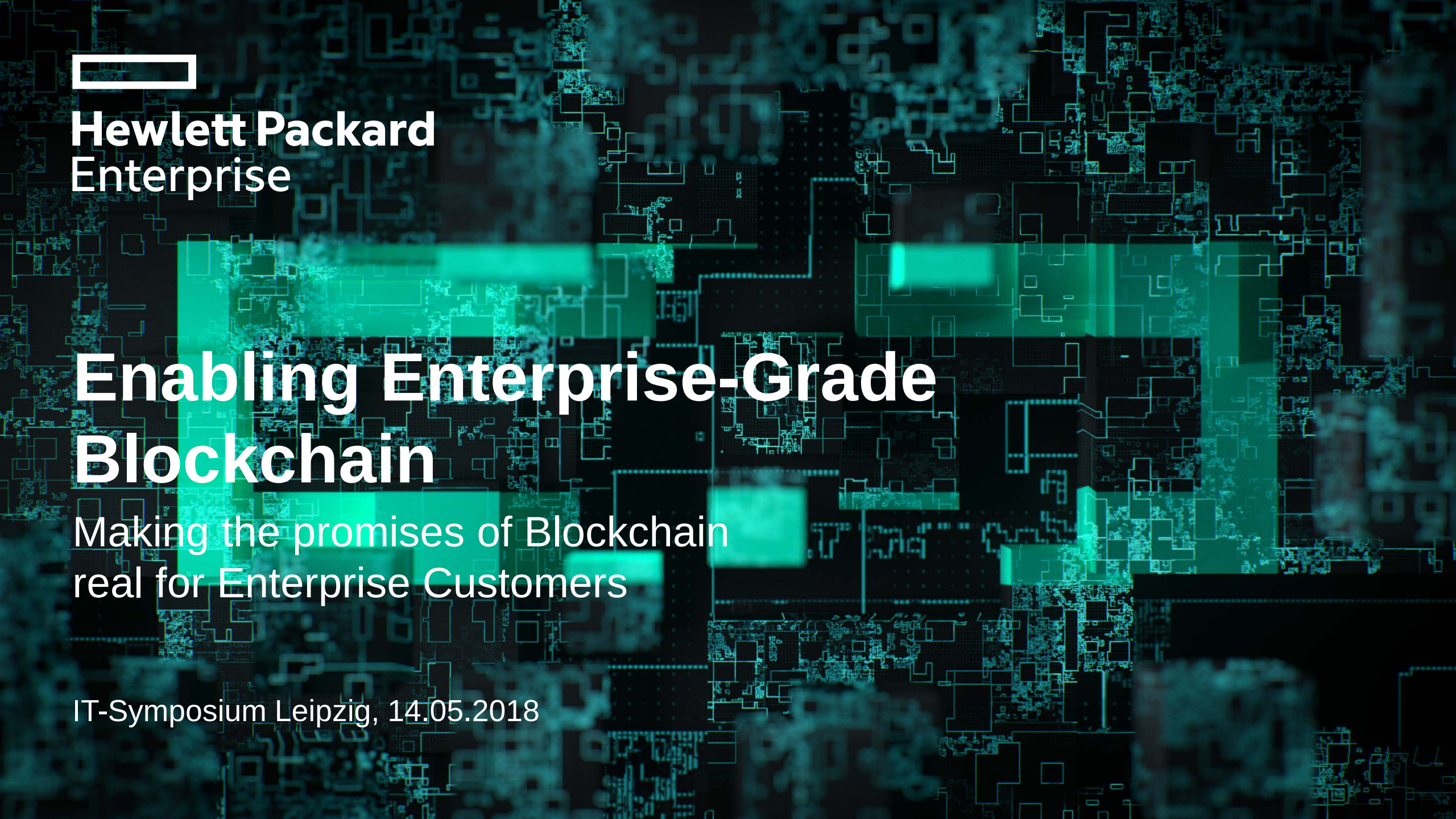

Enabling Enterprise-Grade Blockchain

Making the promises of Blockchain real for Enterprise Customers

IT-Symposium Leipzig, 14.05.2018

Agenda

14:00 – 14:15	Introduction participants & expectations of participants	Rainer Maaß
14:15 – 15:00	Blockchain & Distributed Ledger Technology fundamentals	Marcus Friedrich
15:00 – 15:45	Industry challenges & use case discovery	Matt Lennie
15:45 – 16:00	Break	
16:00 – 17:00	Presentation R3 Corda Blockchain Platform	Simone Blair
17:00 – 18:00	Applying R3 Corda on HPE NonStop to solve industry challenges	Simone Blair and Matt Lennie

Blockchain & Distributed Ledger

Technology fundamentals

Blockchain technology will create significant business value

Total business value generated **to exceed $176B** by 2025[1]

$20B per year reduction in infrastructure costs by 2022[2] due to Blockchain

Trust between un-trusted parties reduces need for trusted stakeholders and intermediaries

New products & services

VCs and Banks have allocated **40%** of all fintech investments in Blockchain startups[3]

Improved regulatory reporting in compliance increases record transparency and ease of auditability

Automation streamlines business processes across entities, building a secure value transfer system

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1 Gartner – "Forecast Blockchain Business Value, Worldwide 2017-2030" (2 March 2017)
2 Santander InnoVentures – "Santander: Blockchain Tech Can Save Banks $20 Billion a Year (5 Jul 2015)
3 **CB Insights – "Blockchain Investment Trends in Review" (2017)**

Intermediaries exist today to provide trust & establish identities

Blockchain Technology: Building Blocks

Asymmetric Cryptography

Private Key

5Jza1DZn2mBv
rmMdBLVbQjSu
33oKCjpkVbwo
8jX6vEtZBpSs
aEt

Public Key

1QGGBQEKgxxjq
th4QTbiqz1UFp
u1pcoTGF

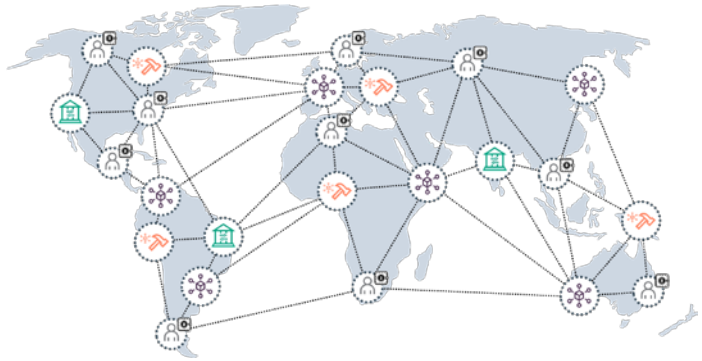
Consensus Mechanism

Proof of Work

Proof of Stake

Proof of Authority

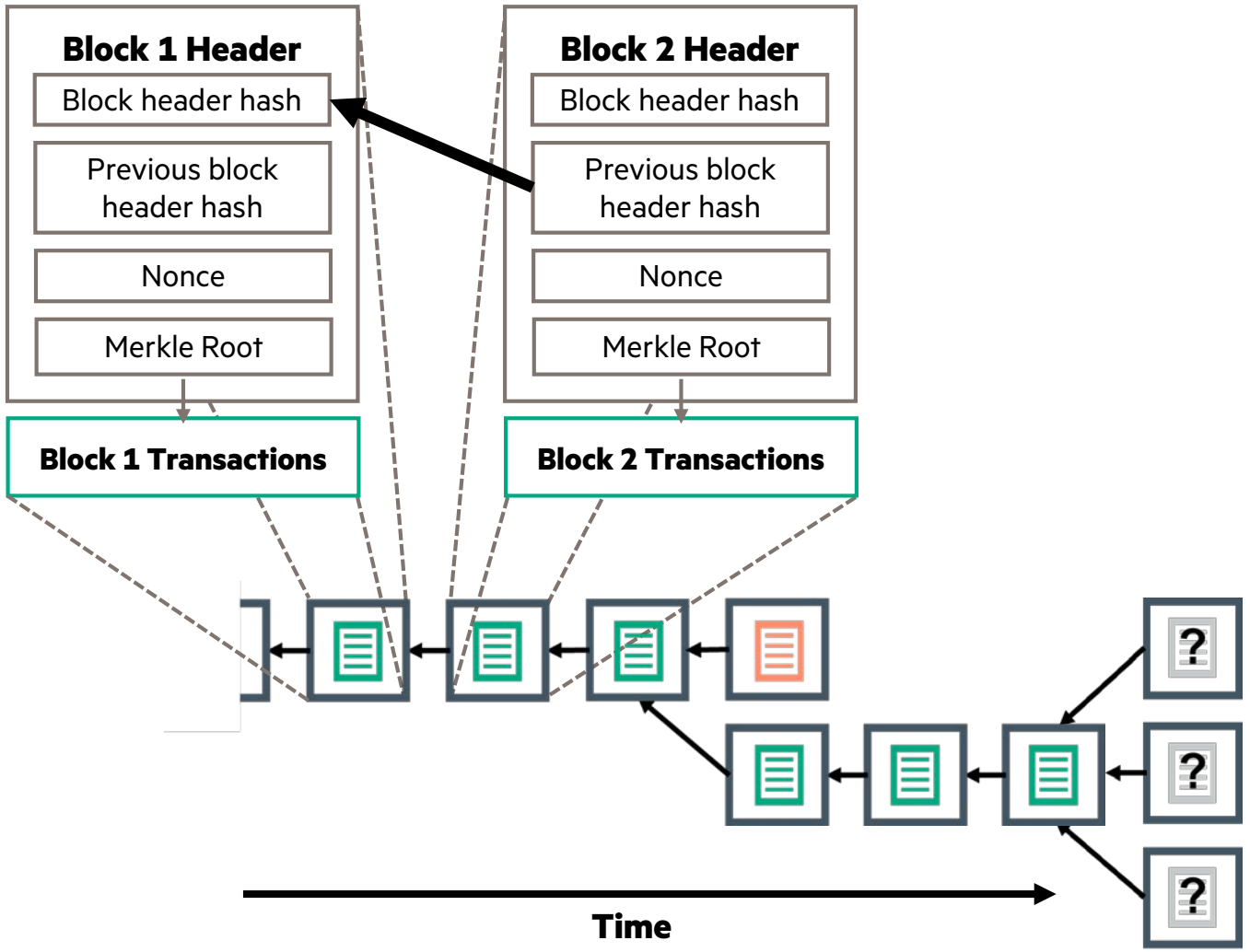
Peer-to-Peer Networking



Cryptographic Hash Functions

e3b0c44298fc1
c149afbf4c899
6fb92427ae41e
4649b934ca495
991b7852b855

Why is it called a Blockchain?



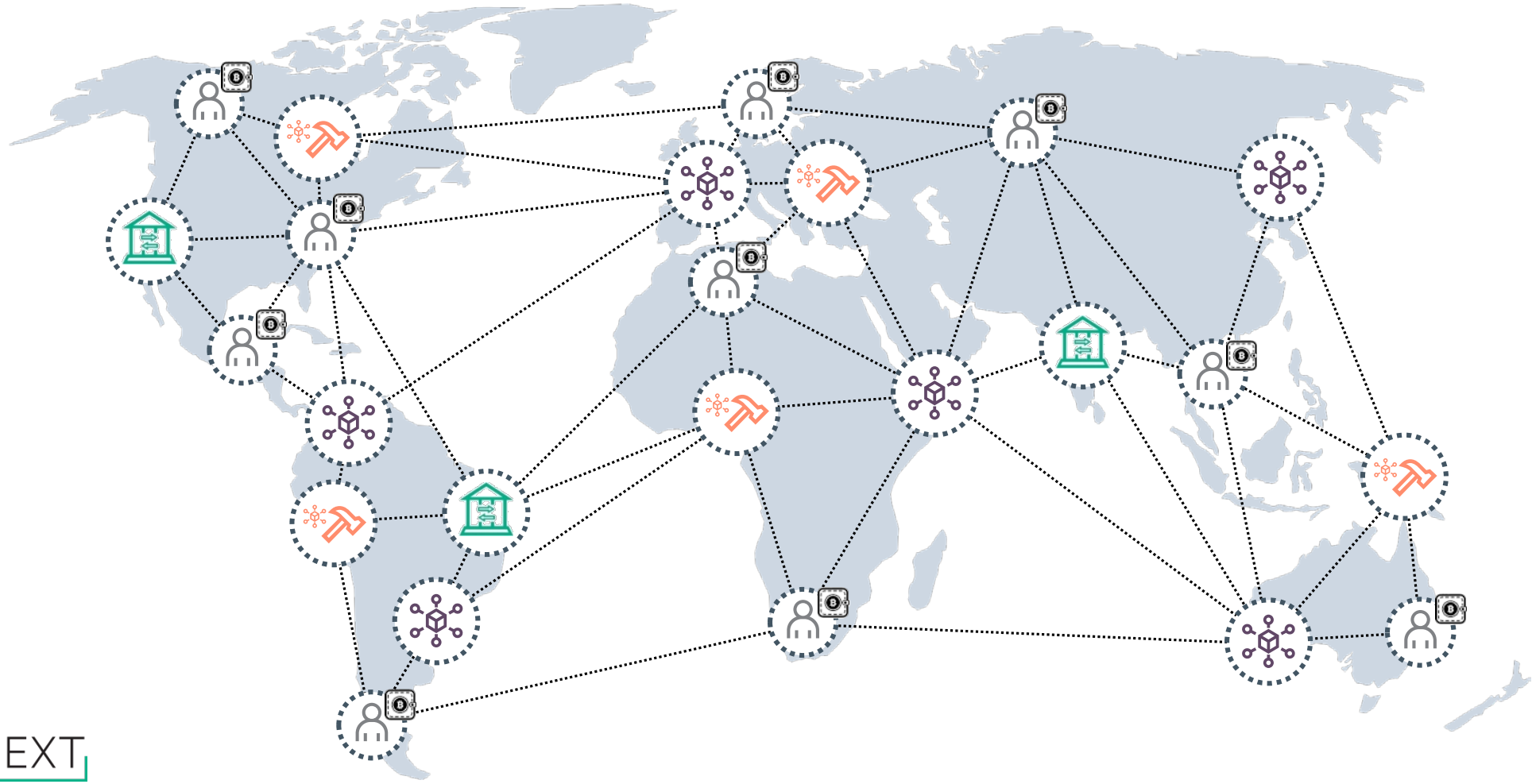
Block of confirmed & valid transactions

Block of potential double spend transactions

Block of unconfirmed transaction requests

Blockchain Ecosystem

User & Developer Wallet Node Exchange Node & Miner



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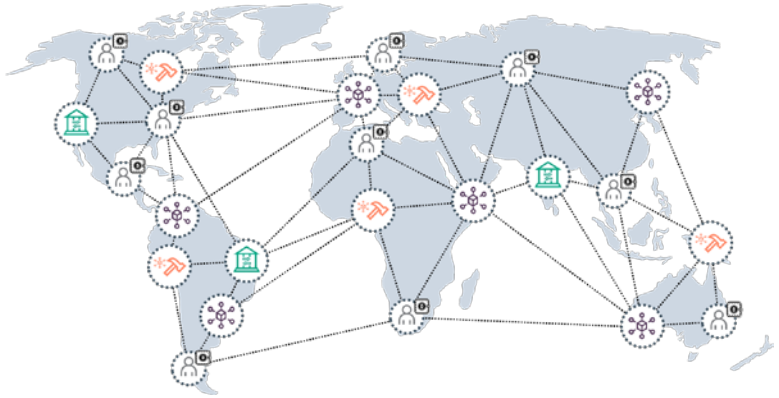
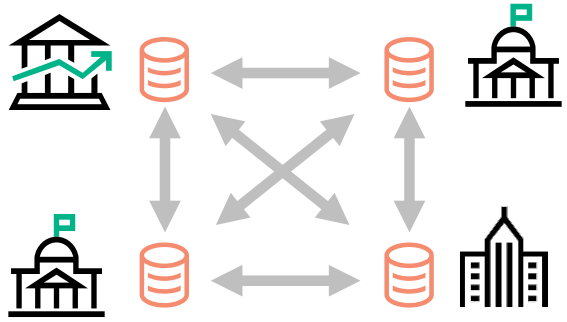
Blockchain vs. Distributed Ledger

Blockchain



- Network of unknown participants
- Consensus: **Proof of Work / Proof of Stake**
- Trust enforced through Blockchain protocol
- **Use case:** Non trusted Transactions

Distributed Ledger



- Network of known & authorized participants
- Consensus: **Proof of Authority**
- Trust enforced through restricted access
- **Use case:** Disintermediate backend processes

Decentralization ... **Centralization**

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Use cases for Blockchain & Distributed Ledger

Business Model

- Funding
- Ownership & liability
- Stakeholder governance
- Customer interaction
- Revenue / Profit / Risk
- Token economy

Create VALUE

Products & Services

- Enable IOT for transactions
- Turn products into assets
- Instant services consumption
- Self-governing machines

Increase REVENUE

Business Operations

- Workflow & processes
- Data sharing & integrity
- Embedded security
- Privacy protocols
- Notarization
- Auditability & immutability

Reduce COST

Blockchain

Distributed Ledger

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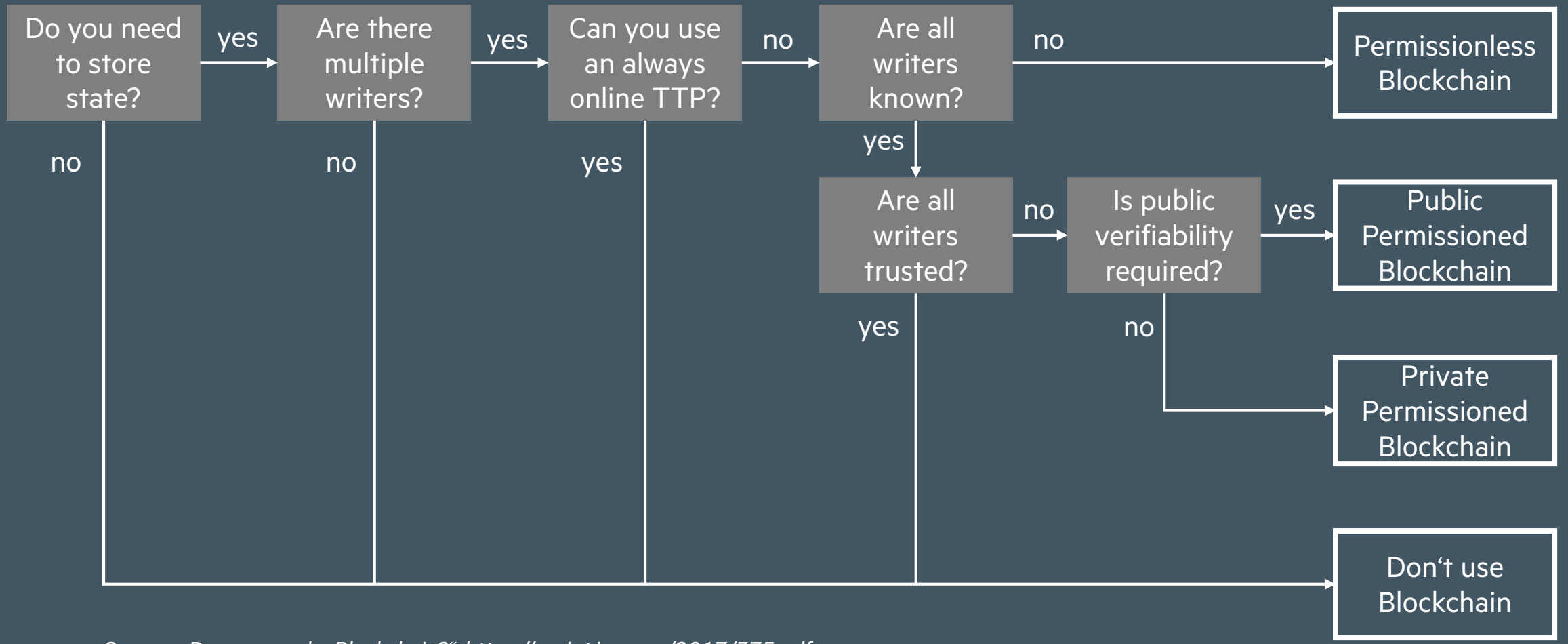
The Token Classification Framework

Utility	Legal Status	Underlying Value	Technical Layer	Purpose
What utility does the token provide?	What is the tokens legal status?	Where does the token derive its value from?	On which system layer is the token implemented ?	What is the token's main purpose?
Usage Tokens	**Utility Tokens**	**Asset-backed Tokens**	**Blockchain-Native Tokens**	**Cryptocurrencies**
Work Tokens	**Security Tokens**	**Network Value Tokens**	**Non-native Protocol Tokens**	**Network Tokens**
Hybrid Tokens	**Cryptocurrencies**	**Share-like Tokens**	**d(App) Tokens**	**Investment Tokens**

Decision tree



Source: „Do you need a Blockchain?“, https://eprint.iacr.org/2017/375.pdf

HPE Pointnext services help you on your Blockchain journey

Explore

HPE Blockchain Transformation Workshop is a one-day interactive session designed to help customers understanding blockchain outcomes and challenges, align to a vision and strategy and identify best use cases and technologies

Experiment

HPE Blockchain Platform Assessment and HPE Blockchain Proof-of Value will gather and validate your use cases, demonstrate technology capabilities and provide a proof-of-value for select use case

Evolve

HPE Blockchain Implementation to get you up and running with your blockchain solution: design & implement production-ready system, manage change and train teams and help you evolve for additional use cases

Partnerships support full integration of blockchain solutions

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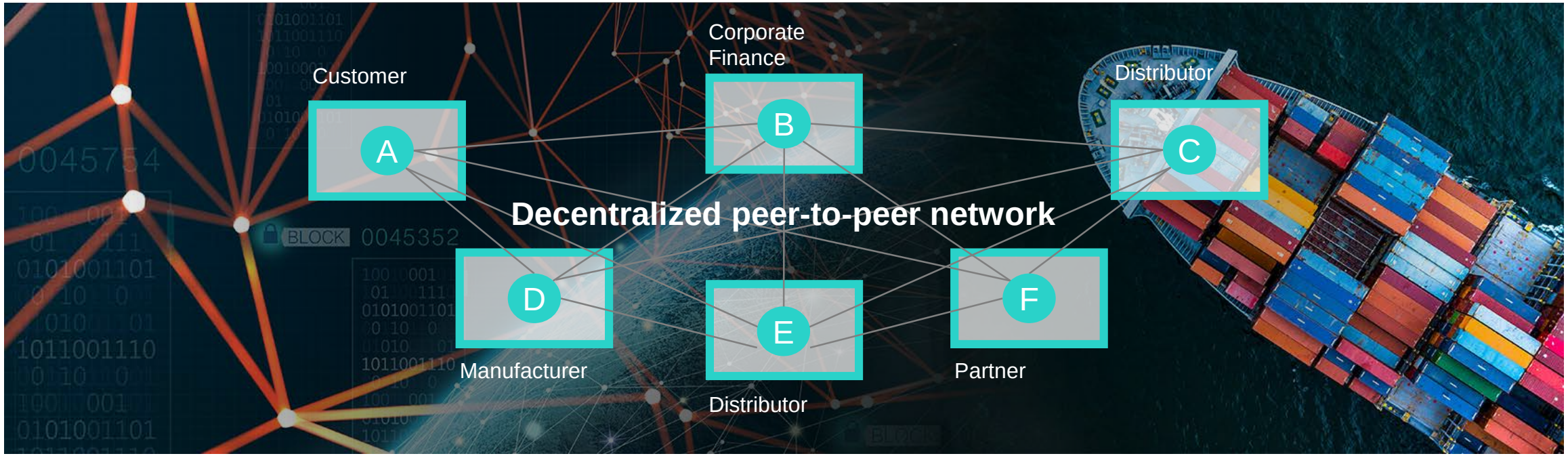
Security Considerations

Example Blockchain attack vectors

Examples of Blockchain security solutions

Supply Chain

Track & trace across the extended value chain



Benefits

- **Provenance & history** of the entire bill-of-materials on a shared, trusted platform
- **Self-auditing** with traceable “chain-of-custody” for every item
- **More effective governance** of service level objectives across all elements of the supply chain
- **Highly scalable** with multi-party relationships
- **Greater efficiency** of planning and execution in large & complex supply chains
- **Greater insights** on demand for forecasting and predictability

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Mission Critical Distributed Ledger Technology (DLT)

Integration of R3 Corda and HPE's Mission Critical NonStop platform

Available as-a-service and on premise

Designed specifically to address the functional and non-functional requirements of enterprise customers

R3 Corda is meeting functional requirements for decentralized business models

- Record, manage and synchronize nodes
- Contracts between trading partners
- Uses distributed ledgers
- Privacy matters – data is shared only between parties who need to know

r3 + Hewlett Packard Enterprise

An enterprise ready solution powers HPE's Mission Critical technology

- Resilient and linear scalability
- Integrated fault-tolerant SQL/MX database
- Highly secure platform
- Empowered by HPE Pointnext services

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