



Blockchain: From Pilot to Production

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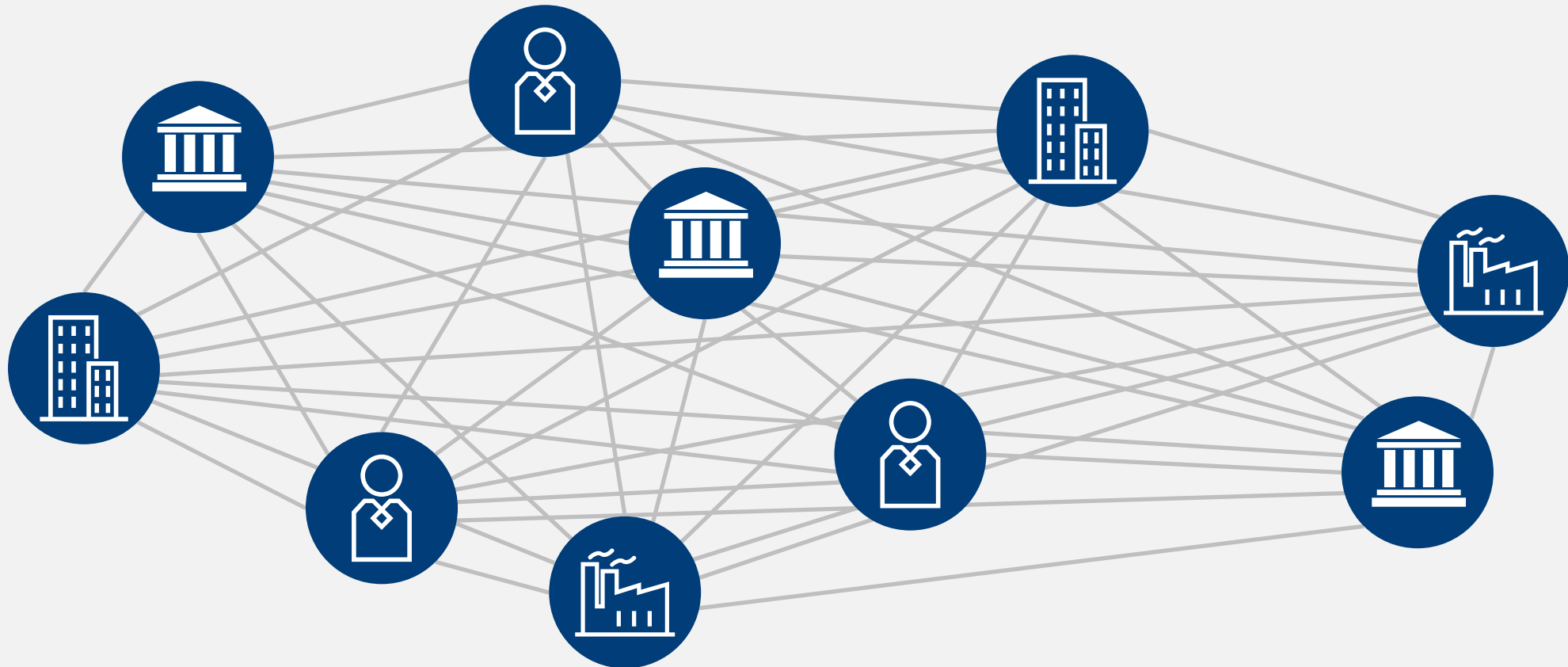
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The Power of the Distributed Ledger

Adding a New Layer of Trust to the Digital Infrastructure

Dramatically Lower the Barriers to Trust

Amongst Enterprises | Amongst Governments | Between Public and Private Sectors

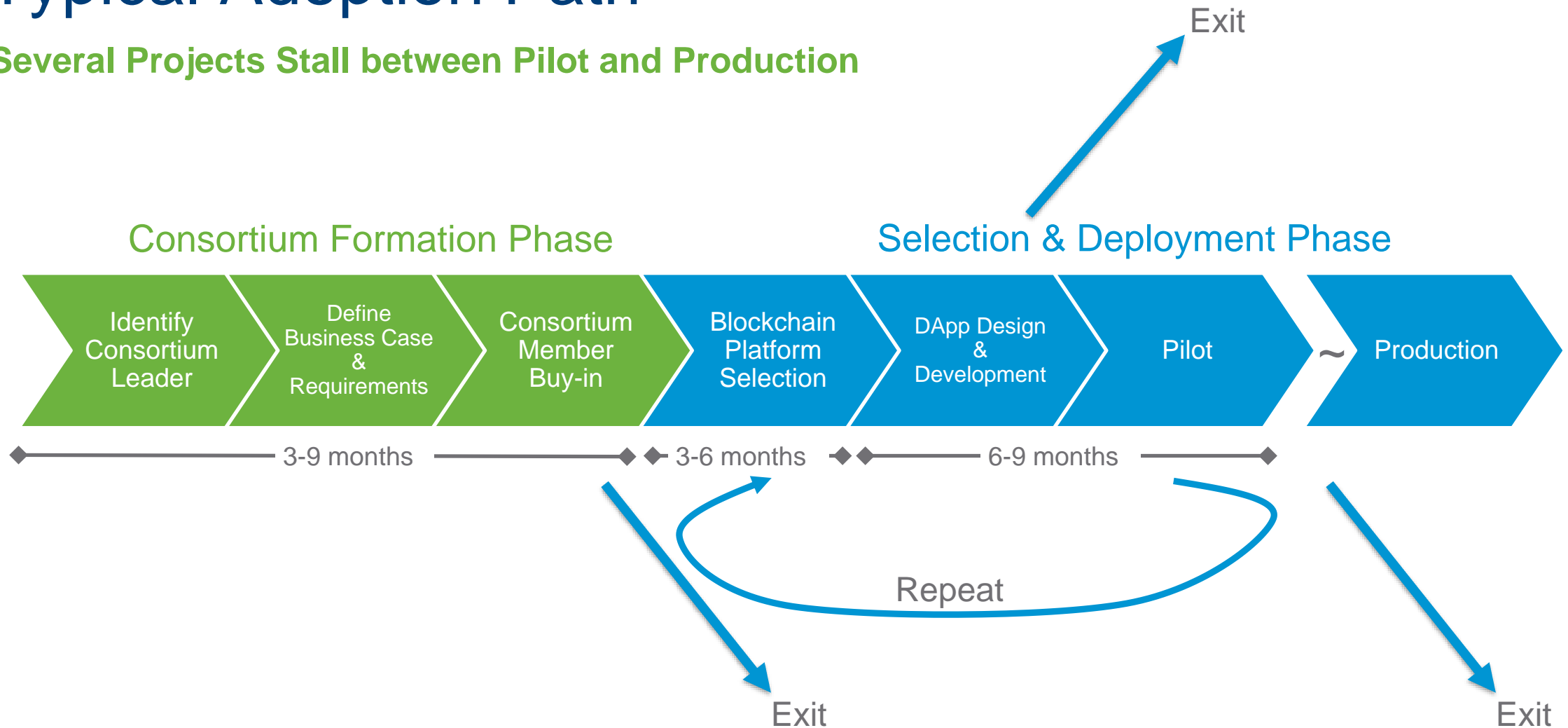


The Promise of Blockchain

- Drive Efficiency
- Speed up the flow of data
- Provide transparency for auditors
- Make me a billionaire
- Solve world hunger

Typical Adoption Path

Several Projects Stall between Pilot and Production

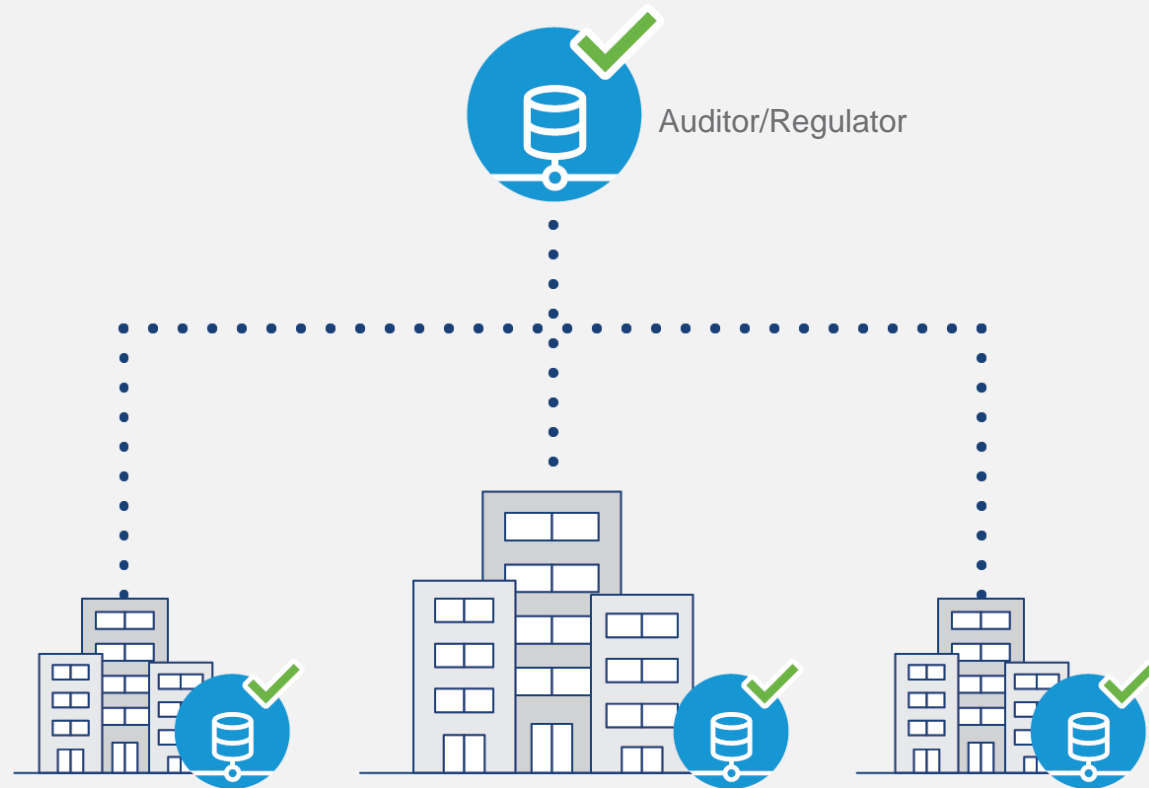


Use Cases

Making Blockchain Enterprise Friendly

Guaranteed and Verified Data Dissemination

Trusted sharing of data within partner networks



Use Case Examples:

- Disease reporting
- Emergency response networks
- Information embargo

Asset and Product Tracking

Data integrity and trust of data



Use Case Examples:

- Part history & provenance
- Damage events
- Maintenance & repair history
- Lot / food tracking

Asset Transfer

Smart contracts providing programmatic access to data



Use Case Examples:

- Payment transfer
- Energy swaps
- Deed transfer & recording

Certified Claims

Verification that you are who you are and have what you have

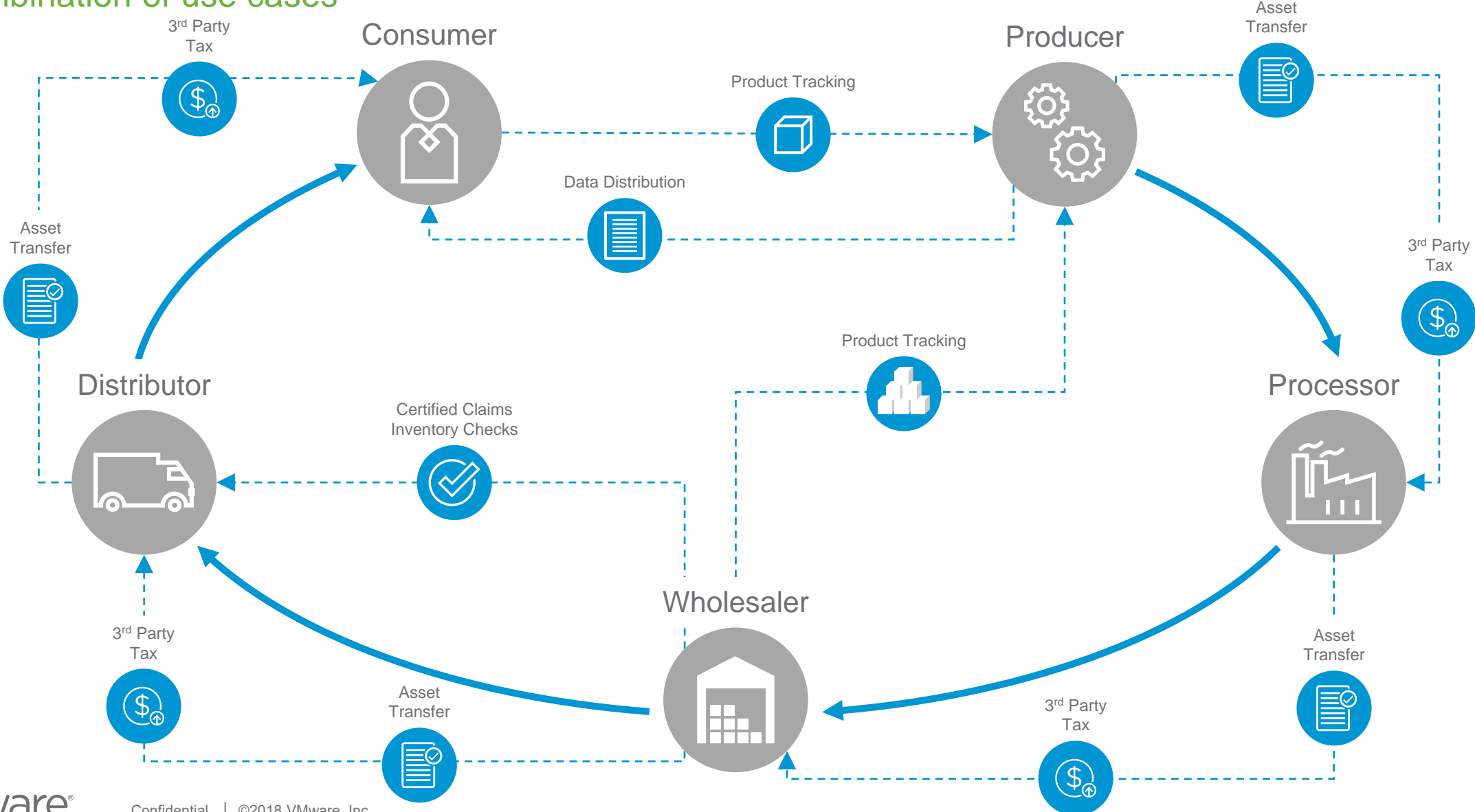


Use Case Examples:

- Digital Transcript
- Background checks
- KYC in banking
- Digital Voting

Supply Chain

A combination of use cases















Where Do People Get Stuck?

Taking Blockchain from Pilot to Production

It's Important to Choose the Right Consensus Method

The Evolution of Consensus

	Mining	Forking	CPU Power	Capital Cost	Time to Finality
Proof of Work					Minutes to Hours to Days
Proof of Stake					Minutes to Hours
Byzantine Fault Tolerance (BFT)					Sub-Second

Common Things Heard from Customers

“The current solution doesn’t perform

– it won’t get me from pilot to production”

“I’m ok with a hosted solution as long as I can have some local replicas”

“I don’t have the tools or knowledge to get this past the risk department”

“I don’t want to be locked into a single cloud provider”

“I don’t want to be locked into a single blockchain solution”

“I don’t want to break the bank on energy costs.”

Better Scaling And Throughput



“The current solution doesn’t perform
– it won’t get me from pilot to production”

Project Concord: A Truly Scalable and Performant Blockchain Platform

**200 WAN Nodes,
2 Months of
Ethereum
Contracts**

Runtime: 2.5 hours

Tput: 170/sec

30x ETH

Latency: 600 ms

24x ETH

1000x XBT

“The current solution doesn’t perform
– it won’t get me from pilot to production”

Project Concord, an open-sourced, highly scalable and energy-efficient engine for digital consensus and contract execution



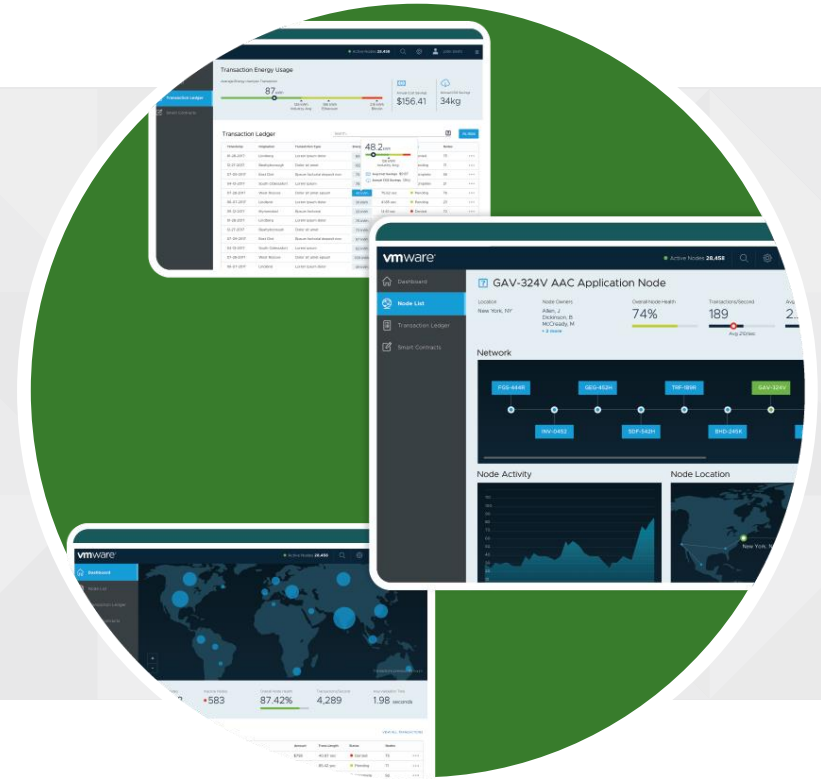
CONCORD

SaaS with Local Replicas



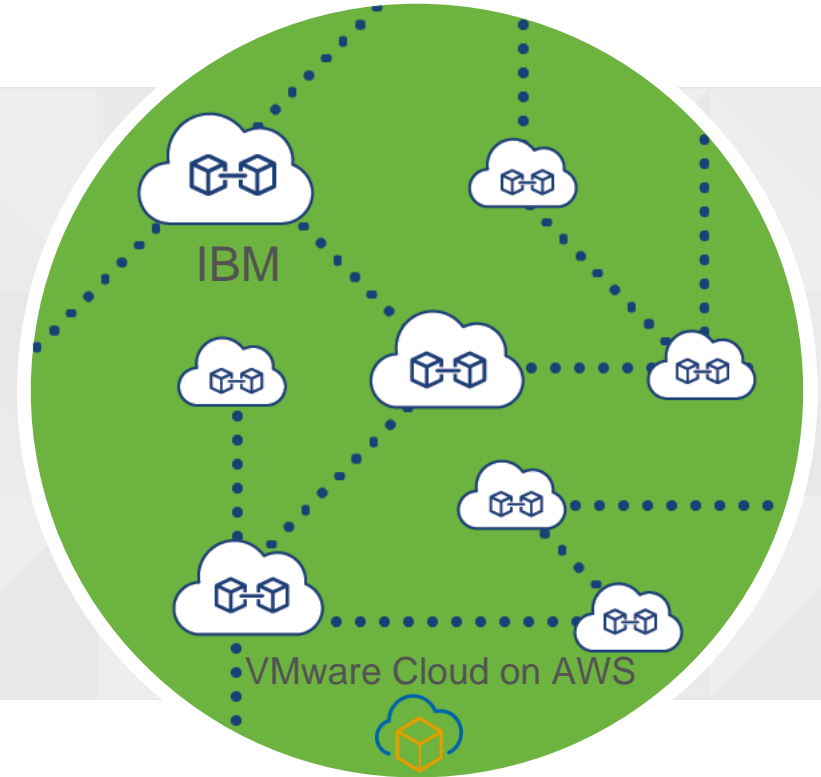
“I’m ok with hosted as long as I can have some local replicas”

Audit, Rich UI, API



“I don’t have the tools or knowledge to get this past the risk department”

Multi-Cloud (Distributed Trust)



“I don’t want to be locked into a single cloud provider”

Multi-Blockchain Management



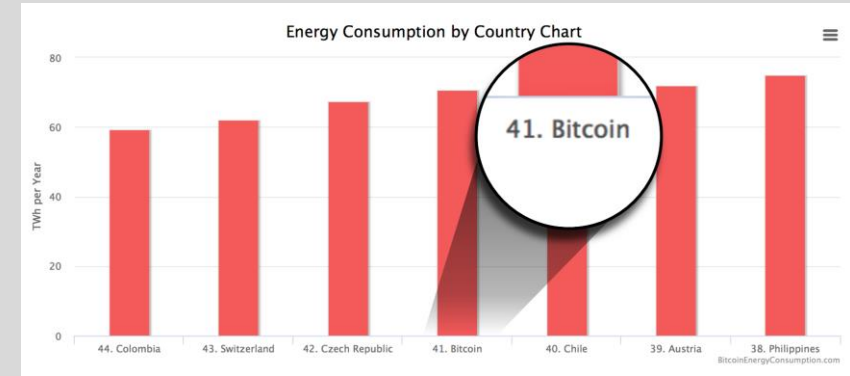
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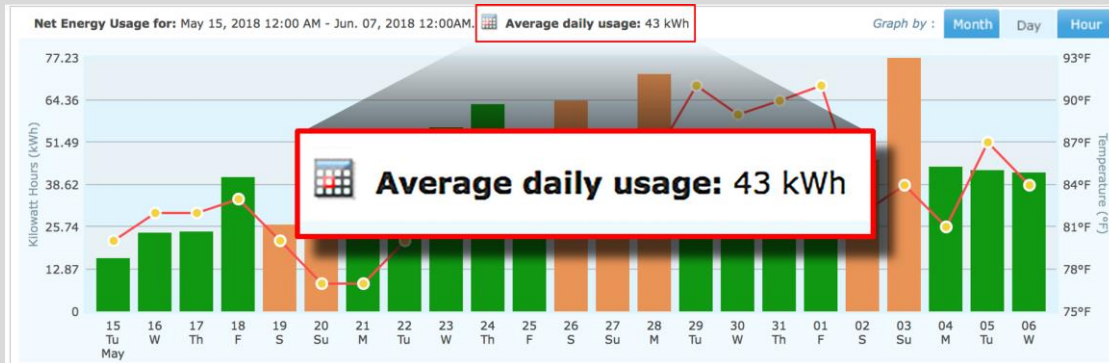
VMware declares energy-guzzling blockchains 'immoral'

Source: https://www.theregister.co.uk/2018/05/31/vmware_radio_innovation_conference/

Electricity Consumed per Transaction (KWh) – 1,017
Carbon Footprint per Transaction (kg of CO2). – 498.09

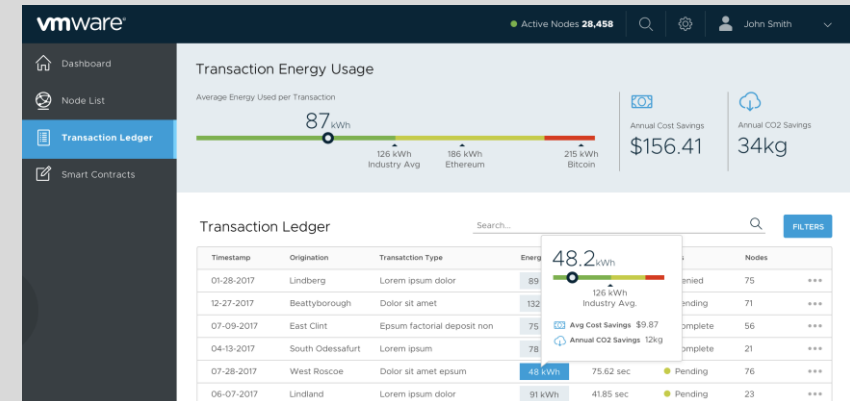


My Home Energy Cost



Source: Mike DiPetrillo, FPL account information

Sucking up Power is BAD!!!!



“I don’t want to break the bank on energy costs”

Common Things Heard from Customers

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 “I don’t want to be locked into a single cloud provider”

“I don’t want to be locked into a single blockchain solution”



 “I don’t want to break the bank on energy costs.”

VMware Sponsored Vision

VMware Blockchain Vision

Standards Organization Work

Industry Affiliations

Linux Foundation / Hyperledger

IC3

Enterprise Ethereum Alliance

Blockchain Apps

IoT Security

Data Dissemination

Supply Chain

Asset Transfer

Verifiable Claims

Blockchain Utilities

Key Mgmt

Zero Knowledge Proofs

Secure Messaging

Identity Management

Multi Blockchain

Contract Security

SMPC

Core Blockchain

Core Security

NSX-t

RSA NetWitness

Project Concord

Management and Security

VMware Enterprise Blockchain UI

Wavefront

vRealize Log Insight

VMware Kubernetes Engine

Consulting

Deloitte

Accenture

Why Blockchain from VMware?

VMware excels at solving distributed management and security problems

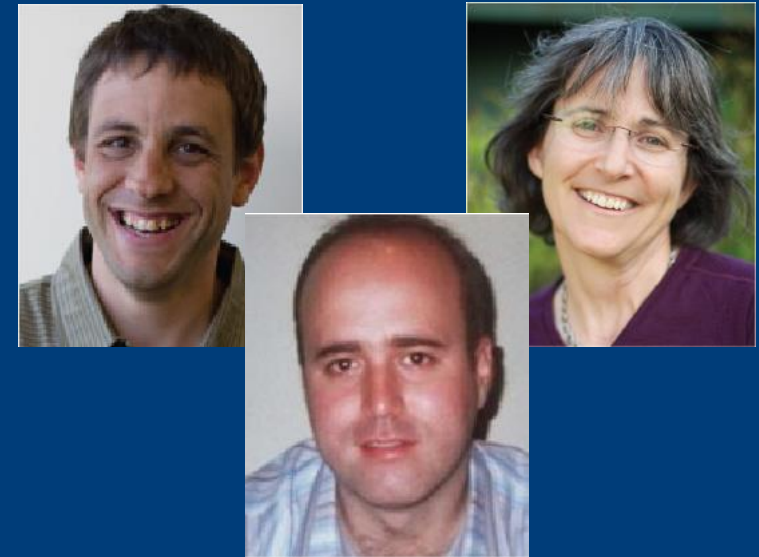
- We process your data (core virtualization)
- We protect and manage your data in flight (network virtualization)
- We protect and manage your data at rest (storage virtualization)
- We protect and manage user's access to the data (AirWatch)

We have a highly distributed platform for the enhanced security of your blockchain nodes

- Over 4,000 cloud partners

Over 4 years of advanced research and peer reviews followed by over a year of validation through customer engagements

We have world-renowned leaders in consensus protocols





Thank You