Blockchain and AI

on the Cloud

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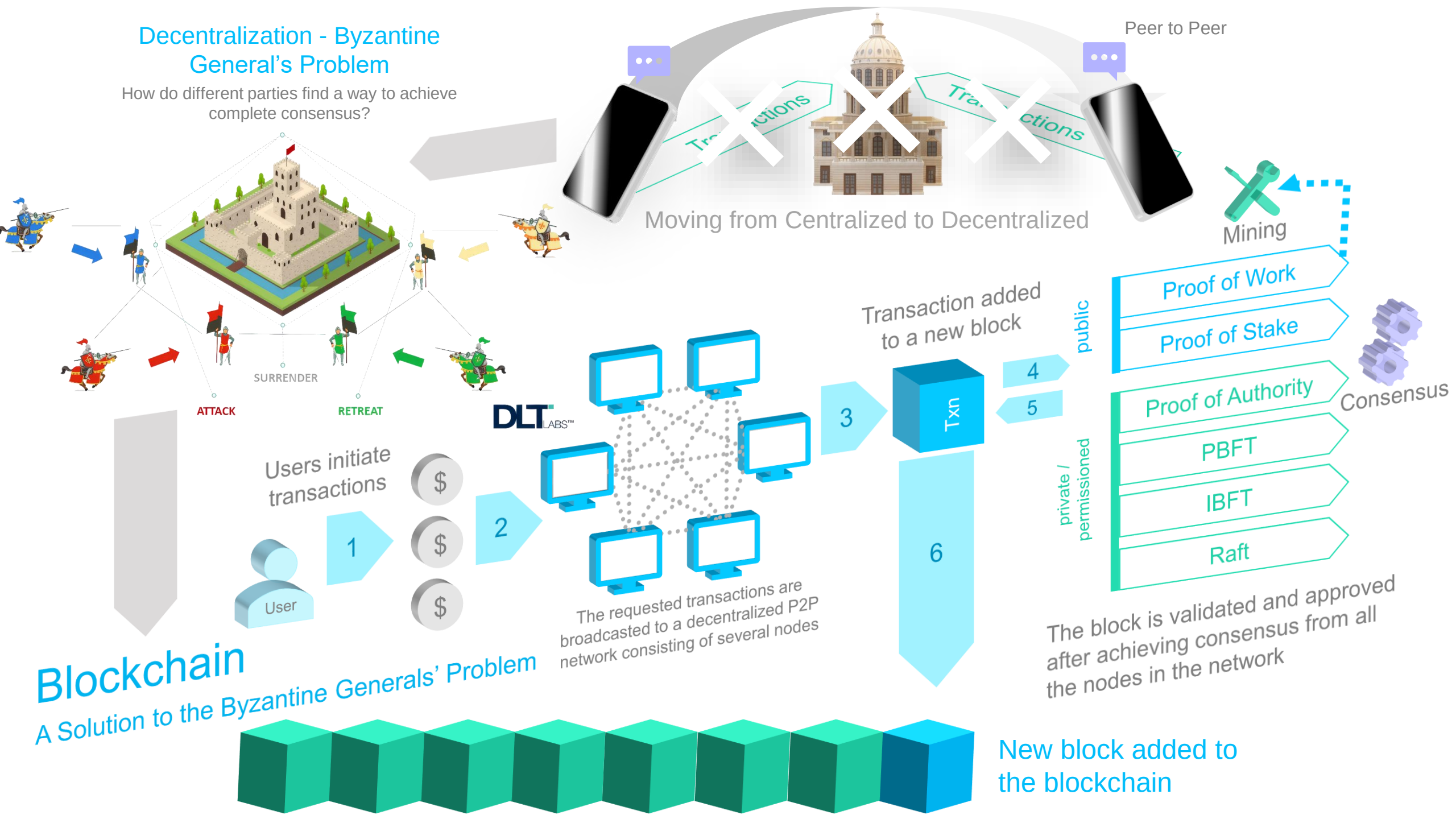
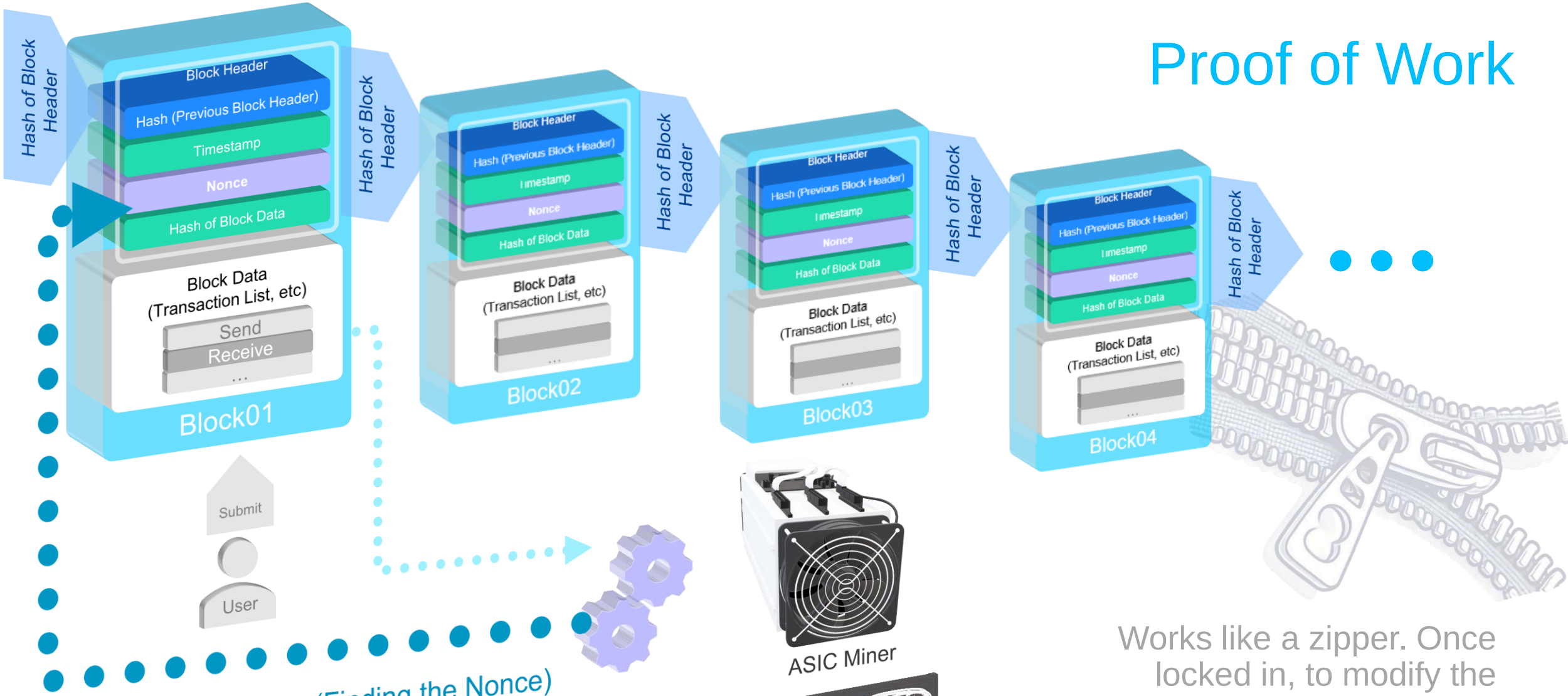
Let Ideas Flow

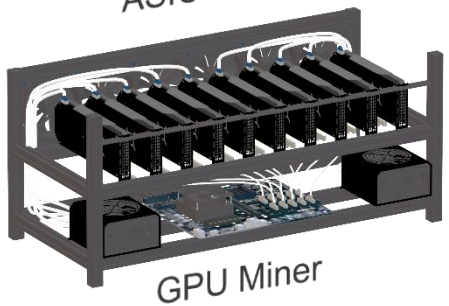

Decentralization - Byzantine General's Problem
How do different parties find a way to achieve complete consensus?
SURRENDER
ATTACK
RETREAT
DLT LABS™
Peer to Peer
Moving from Centralized to Decentralized
Mining
Consensus
Users initiate transactions
User
1
2
3
4
5
6
Txn
Transaction added to a new block
The requested transactions are broadcasted to a decentralized P2P network consisting of several nodes
public
private / permissioned
Proof of Work
Proof of Stake
Proof of Authority
PBFT
IBFT
Raft
The block is validated and approved after achieving consensus from all the nodes in the network
Blockchain
A Solution to the Byzantine Generals' Problem
New block added to the blockchain

Proof of Work



Mining (Finding the Nonce) takes significant computing power in mining.

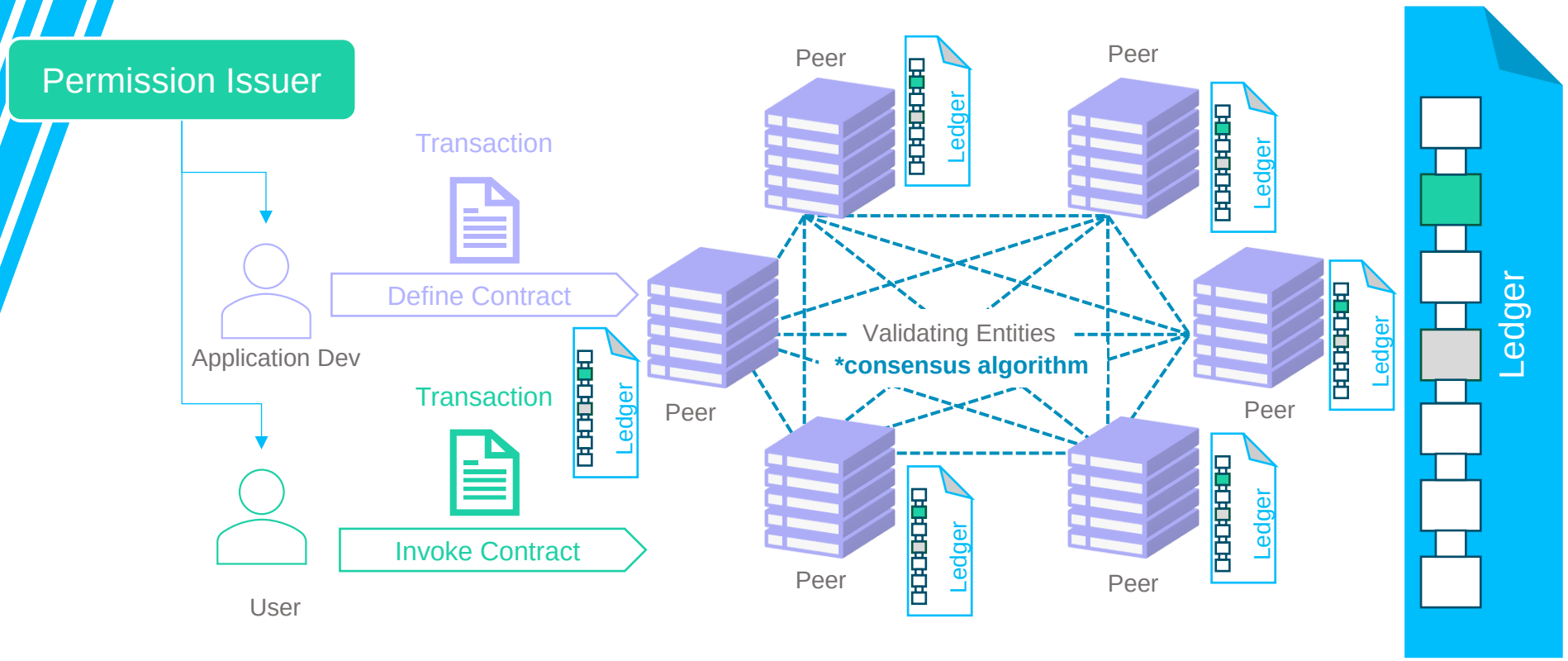
ASIC Miner



GPU Miner

Works like a zipper. Once locked in, to modify the chain a hacker has to repeat the mining process for the entire chain

Permissioned Blockchain



Permissioned System

A strong identity management and distinct roles for users and validators

Distributed App Support

Supports deployment and invocation of distributed 'chaincodes'.

Validating Entities

Decentralized P2P Validation of transactions through consensus

Distributed Ledgers

Decentralized store of transactions and hash (global state) data.

Pluggable Consensus

Protocols eg. PBFT, Raft, Sieve are provided. New ones can be implemented.

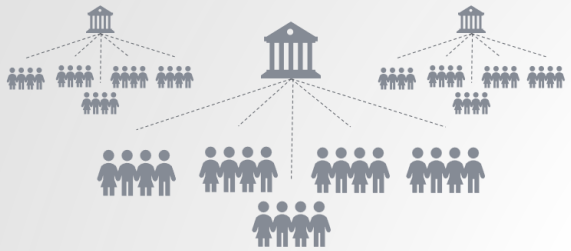
Consensus Algorithms

Proof of Activity (PoA)
Proof of Authority (PoAuth)
Proof of Burn (PoB)
Proof of Capacity (PoC)
Proof of Elapsed Time (PoET)
Proof of Importance (PoI)
Proof of Stake (PoS)
Proof of Weight (PoW)
Cellular Automaton Consensus
Delegated Byzantine Fault Tolerance (dBFT)
Delegated Proof of Stake (DPoS)
Directed Acyclical Graphs (DAGs)
Fast Probabilistic Consensus (FPC)
Leased Proof of Stake (LPoS)
Practical Byzantine Fault Tolerance (pBFT)
Etc…

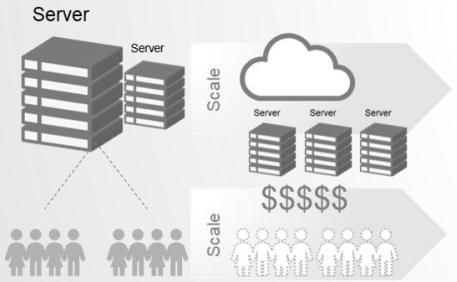
Blockchain

Traditional Data Store

Centralized



Usually Single Authority
Challenges in data sync for multiple authority

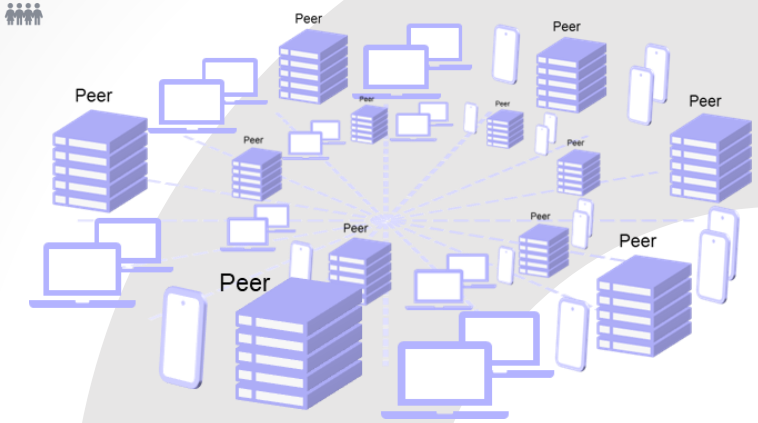


Costly high-availability, replication and scalability solutions required, many requiring configuration and administration efforts. **No code verification.**

1. Distributed & Trust-less

Decentralized

Multiple/
No Authority



2. Immutable & Auditable

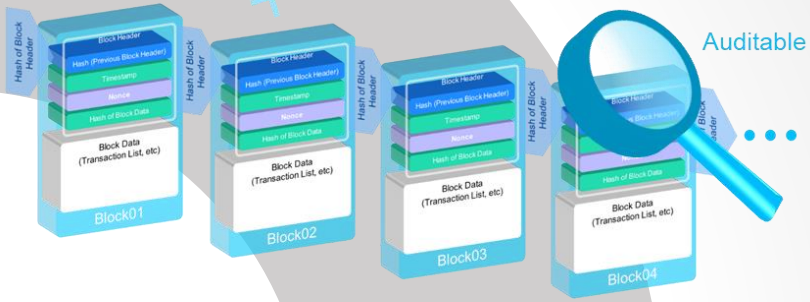
Inherent features prevent tampering

Transparent

Immutable

Verifiable

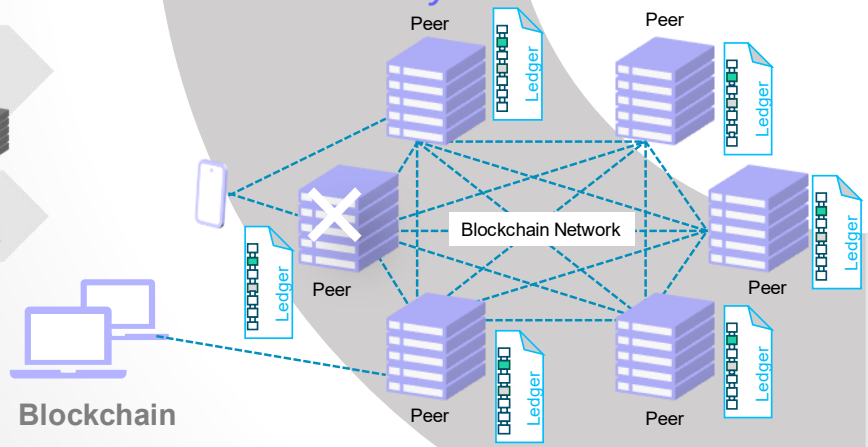
Auditable





Bad actors with access to system can tamper with data.

3. Resilience & Availability



Blockchain

Verified code
Offline Mode

4. Open & Cost Effective

- Polygon
- Ethereum
- Avalanche
- Hyperledger Fabric
- Hyperledger Besu
- Quorum
- Corda

Multiple Open Source options

Traditional Data Store

ORACLE

IBM

SAP

Microsoft

Enterprise grade data store are usually expensive and vendor locked-in

Blockchain vs Traditional Data Store

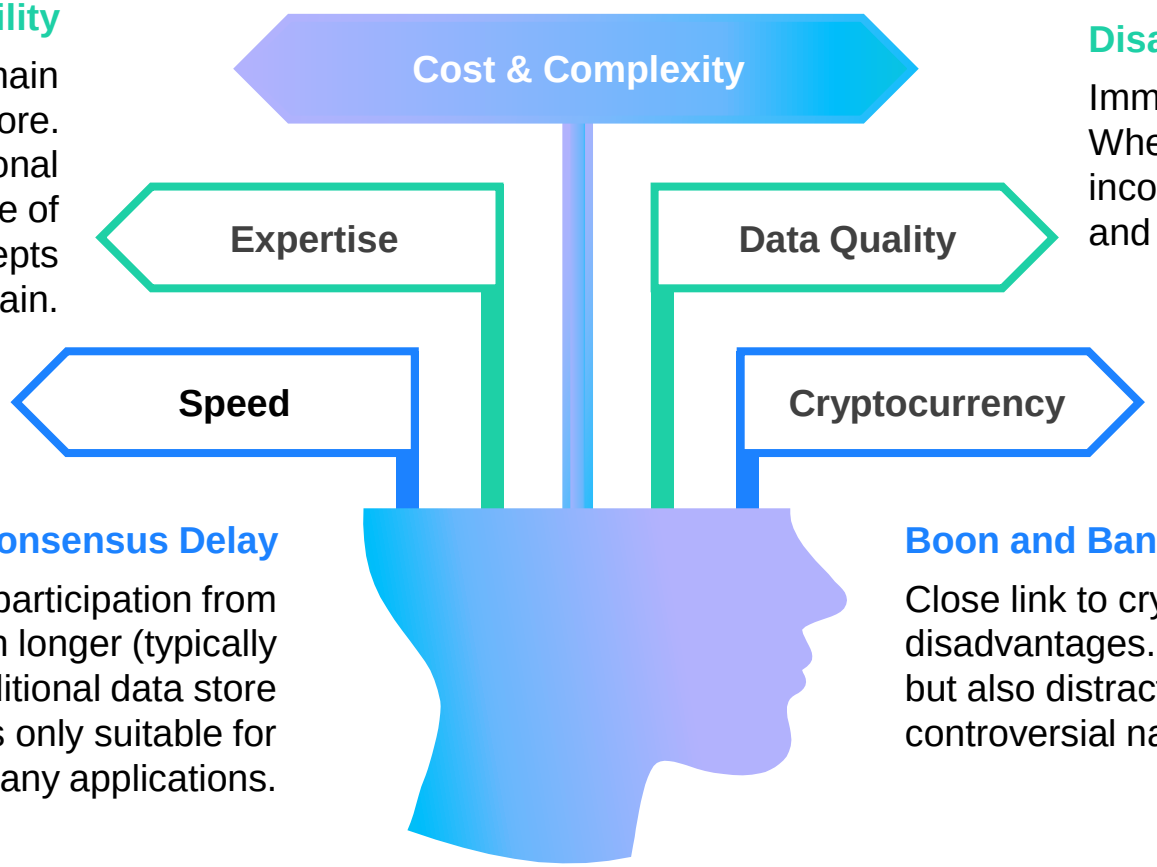
Blockchain Challenges

Need the Right Partner

Developing and maintaining a blockchain system can be expensive and technically challenging without proper strategy and partnership.

Skillset Availability

Expertise for enterprise Blockchain implementation trails traditional datastore. While some blockchain use traditional languages such as Java, knowledge of RDBMS and NoSQL datastore concepts still far exceeds that of Blockchain.



Disadvantages of Immutability

Immutability can be a double edged sword. When quality of data is poor, purging of incorrect data will require a more tedious and complex consensus process.

Consensus Delay

Consensus algorithms that require participation from multiple parties typically take much longer (typically several seconds) than traditional data store (milliseconds to seconds). It is only suitable for write-once read-many applications.

Boon and Bane of Cryptocurrency Link

Close link to cryptocurrency has its advantages and disadvantages. It draws attention to the technology but also distracts its adoption with the volatile and controversial nature of crypto and NFTs.

Risk Management & Smuggling Prevention

- Automated Risk Assessment
- Tamper-Proof Shipping Seals
- Improved Border Security

Supply Chain Security & Fraud Prevention

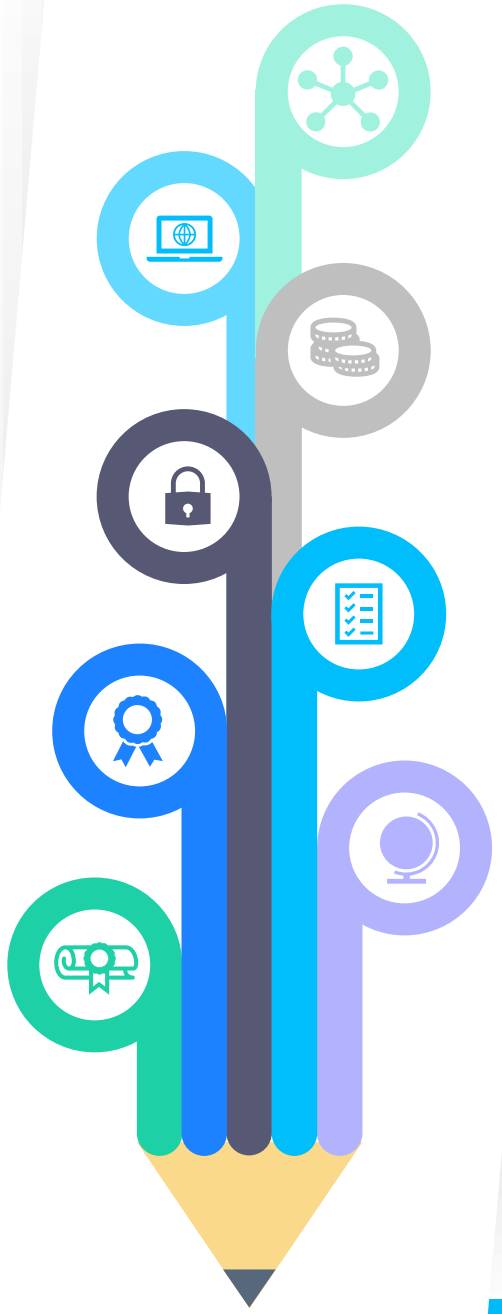
- Real-Time Cargo Tracking
- Anti-Counterfeiting Measures
- Customs Compliance Monitoring

Intellectual Property & Trademark Protection

- Verification of Trademarked Goods
- Tracking Luxury & High-Value Goods

Trade Documentation & Paperless Customs

- Blockchain-Based Certificate of Origin, Bills of Lading & Invoices
- Smart Contracts for Automated Approvals
- Tamper-Proof Documentation



Integration with Internet of Things (IoT)

- Sensor-Based Monitoring
- GPS & RFID Integration

Tariff & Duty Collection

- Automated Tariff Calculation
- Fraud Prevention in Duty Payments
- Transparent Revenue Collection

Faster Customs Clearance & Reduced Corruption

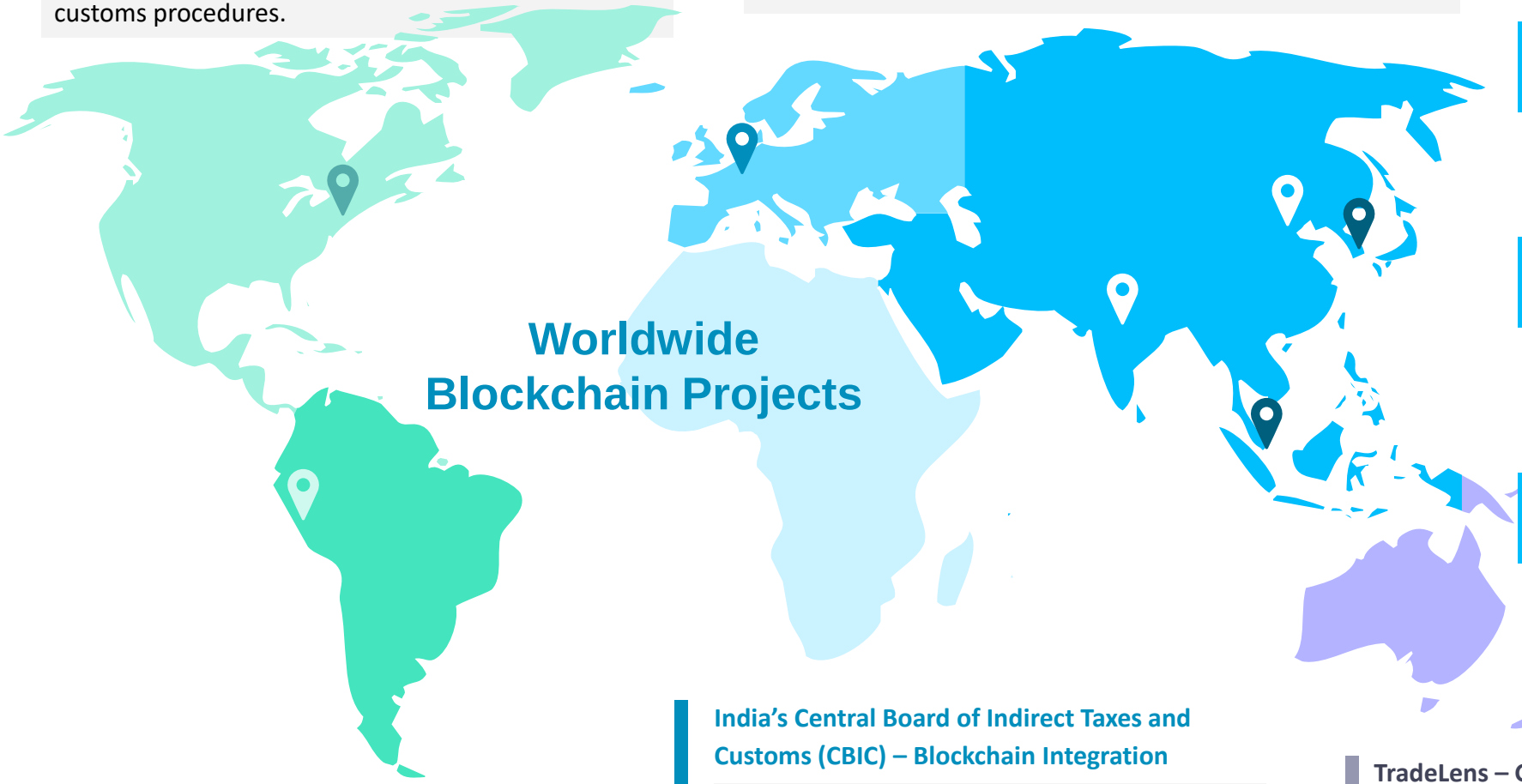
- Automated Clearance Approvals
- Immutable Record-Keeping
- Transparent Audits & Compliance Checks

Cross-Border Trade & Interoperability

- International Trade Agreements Compliance
- Interoperable Customs Systems
- Single Trade Window Integration

Blockchain Use Cases

Worldwide Blockchain Projects



United States Customs and Border Protection (CBP) – Blockchain Pilots

CBP has tested blockchain solutions to enhance intellectual property rights protection and streamline customs procedures.

European Union – DG TAXUD Blockchain Initiatives

The European Commission's Directorate-General for Taxation and Customs Union (DG TAXUD) has been exploring blockchain applications to improve customs processes.

World Customs Organization (WCO) – Open Customs Blockchain

The WCO is developing the "Open Customs Blockchain" to facilitate the exchange of key customs data in foreign trade.

South Korea Customs Service (KCS) – Blockchain Initiatives

The KCS has been exploring blockchain applications to enhance transparency and efficiency in customs procedures.

China’s General Administration of Customs (GACC) – Blockchain Integration

China's GACC has integrated blockchain technology to streamline customs processes and enhance data sharing.

Singapore Customs – Networked Trade Platform (NTP)

Singapore developed the NTP, a one-stop trade and logistics ecosystem that leverages blockchain for secure data exchange.

Peru Customs (SUNAT) – Blockchain Projects

SUNAT has been investigating blockchain solutions to improve customs operations and tax collection.

India’s Central Board of Indirect Taxes and Customs (CBIC) – Blockchain Integration

India's CBIC has been exploring blockchain technology to enhance customs processes and trade facilitation.

TradeLens – Global Collaboration with Customs Agencies

TradeLens, a blockchain-enabled digital shipping platform developed by IBM and Maersk, has been adopted by various customs authorities to improve supply chain transparency and efficiency.

Connecting Businesses. Creating Opportunities

SICC Singapore International Chamber of Commerce
Helping businesses and Singapore since 1837

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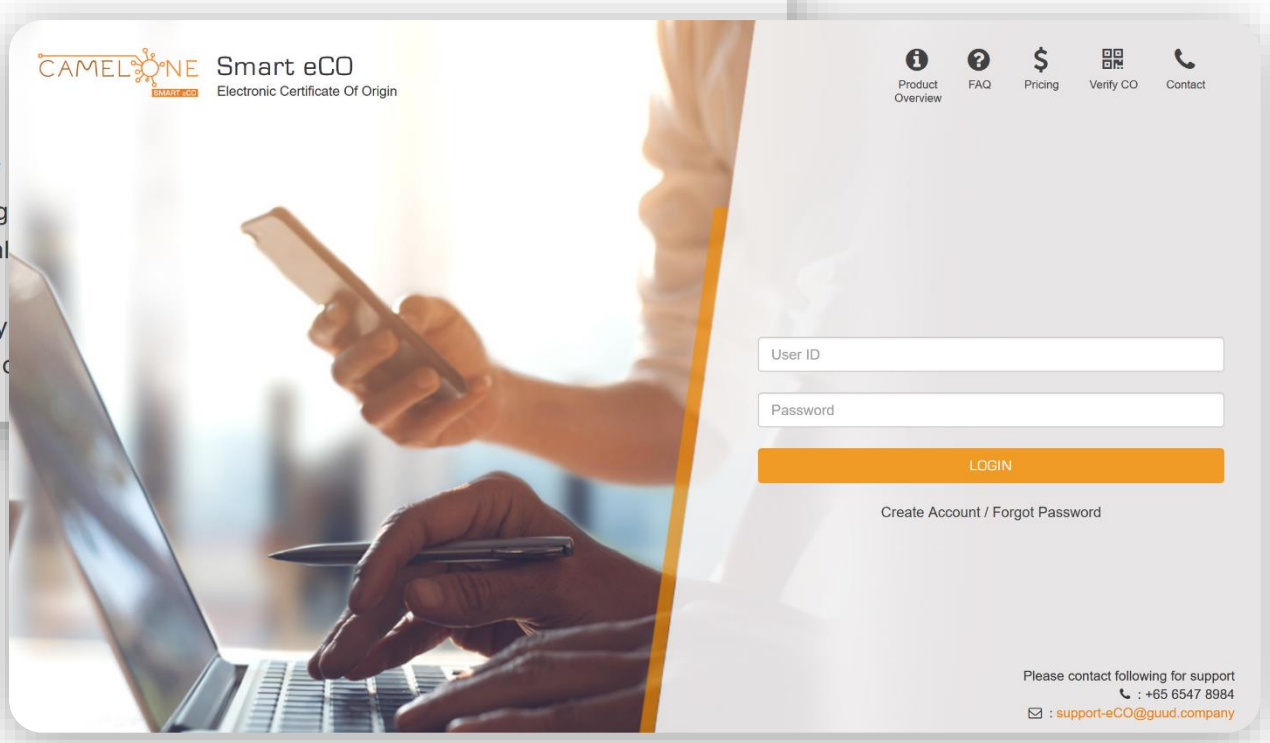
Finyear CORPORATE FINANCE FINTECH DEFI, BLOCKCHAIN LES ENTRETIENS BY Fy JOBBOARD NE

SICC and vCargo Cloud Launch World's First Blockchain-based eCO

The world's first blockchain-based Electronic Certificate of Origin [eCO] platform was unveiled in Singapore yesterday by the Singapore International Chamber of Commerce [SICC] and Singapore-based cross-border solutions provider vCargo Cloud Pte [VCC].

Developed by VCC, a 50.01%-owned subsidiary of
transparency, security and efficiency in authenticating
on a private blockchain network that prevents fraud, al

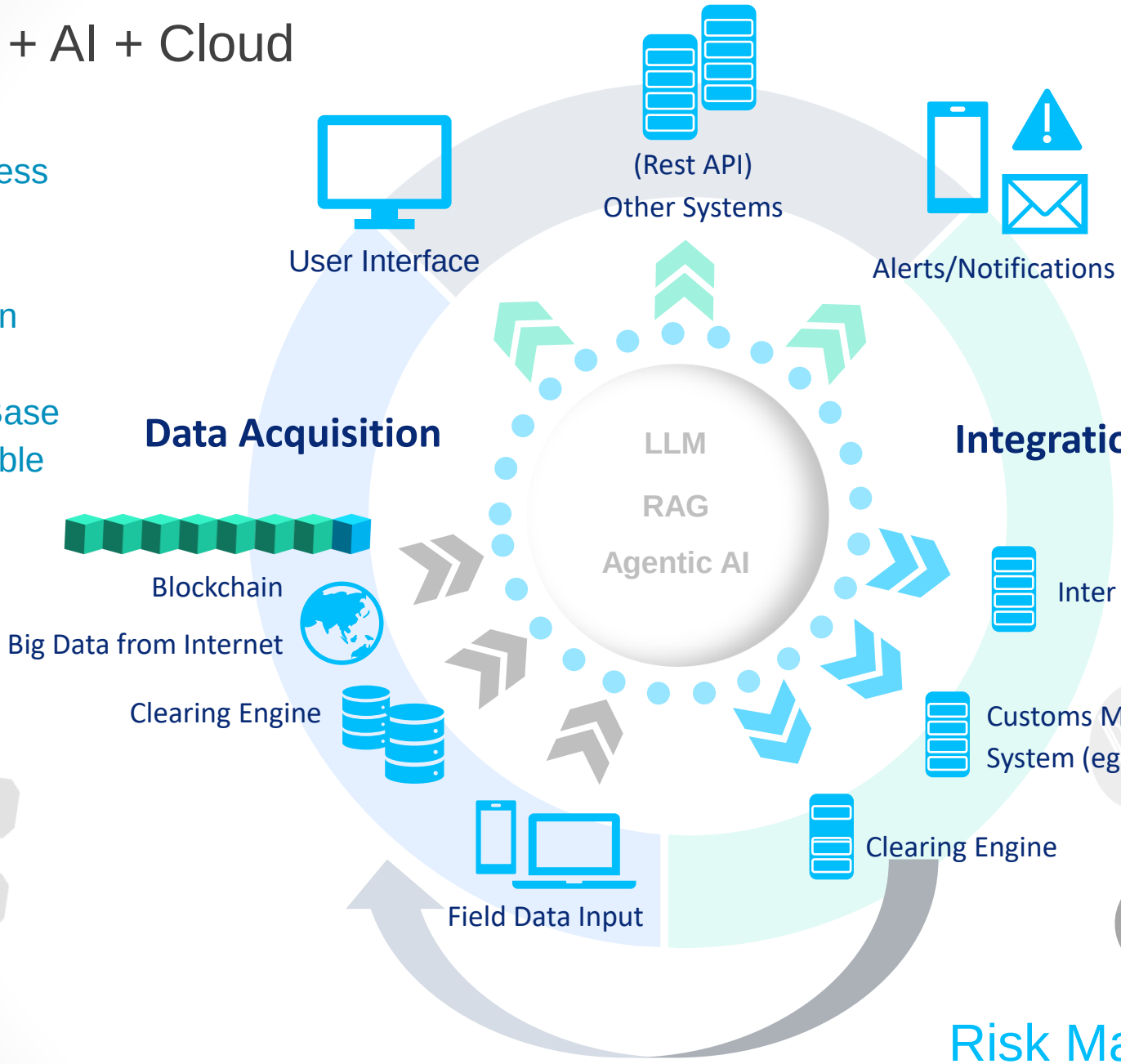
SICC and VCC unveiled the platform at a ceremony
Senior Advisor of Enterprise, which was attended by
and industry leaders.



Blockchain + AI + Cloud

Challenges

1) Manual Update Process
2) Variable Accuracy of Detection
3) Dependent on Human Knowledge
4) Limited Knowledge Base
5) Manual Input/Unreliable Data Quality



Advantages

1) Simpler Processes
2) Improved Accuracy of Detection
3) A Smarter System
4) Expanded Knowledge Base
5) Simplified, Faster and Smarter Data Input

Risk Management System


Q&A



Thank You