

Accelerating your Blockchain Projects with Microsoft and KPMG

Mark Torr – Microsoft
George Tziortzis - KPMG

“...Bitcoin offers a sweeping vista of opportunity to **reimagine how the financial system can and should work** in the Internet era, and **a catalyst to reshape that system** in ways that are more powerful for individuals and businesses alike” - Marc Andreessen, A16z

Blockchain is not just about money

"...a sweeping vista of opportunity to **reimagine how the financial system can and should work** in the Internet era, and **a catalyst to reshape that system** in ways that are more powerful for individuals and businesses alike"

- Marc Andreessen, A16z

CIO JOURNAL.

Why Blockchains Could Transform How the Economy Works

 Bloomberg
Businessweek

The Technology would turn a company into a
seamless network of coordinated freelancers

Forbes

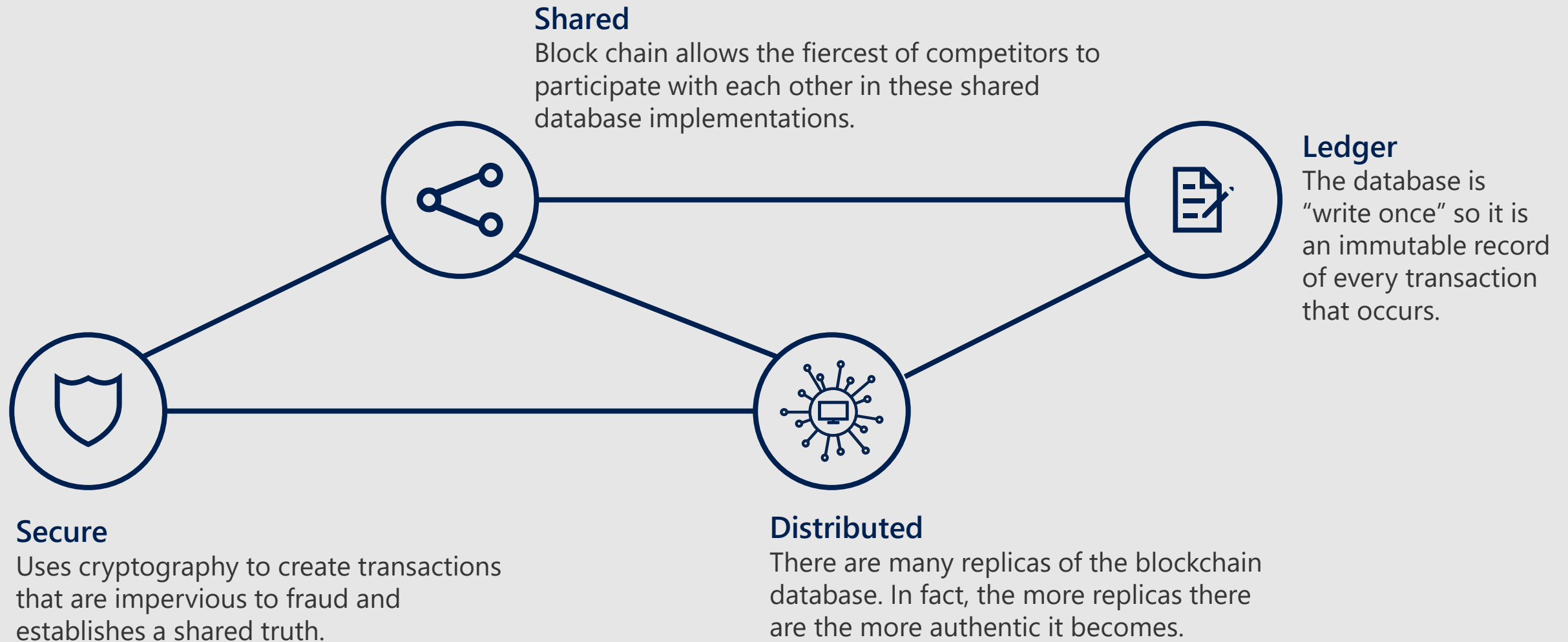
Blockchain For Supply Chain:
Enormous Potential Down The Road

Is Blockchain the Most Important
IT Innovation of Our Age?

By The Guardian



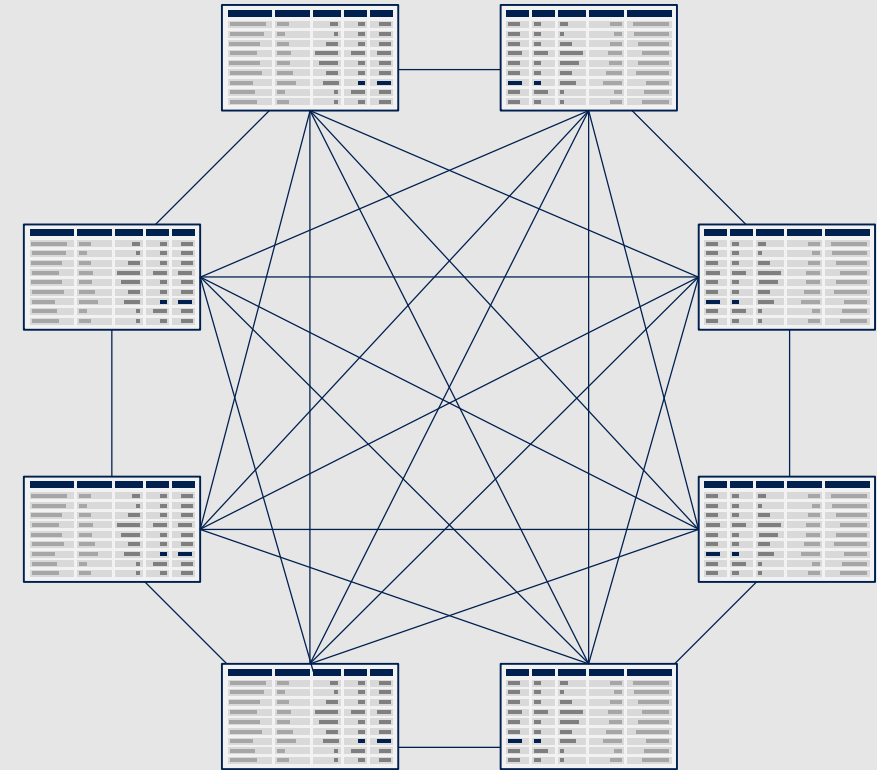
Blockchain is a secure, shared, distributed ledger



Data is stored in a ledger

| FROM | TO | PROPERTY | VALUE |
|-------|-------|----------|------------|
| Alex | Katie | Payment | \$500 |
| Jim | Sally | Payment | \$300 |
| Alex | Garth | Asset | Car |
| Katie | Tony | Payment | \$100 |
| Molly | Paula | Message | I love you |

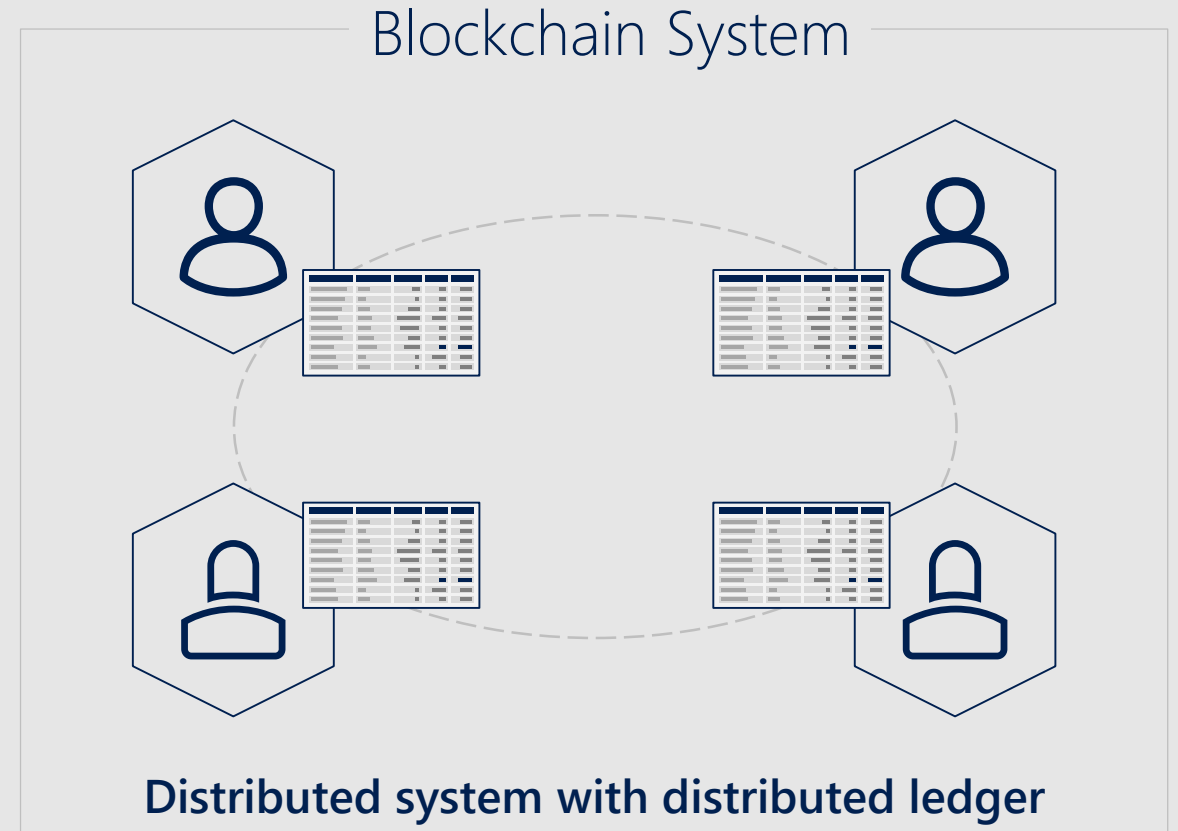
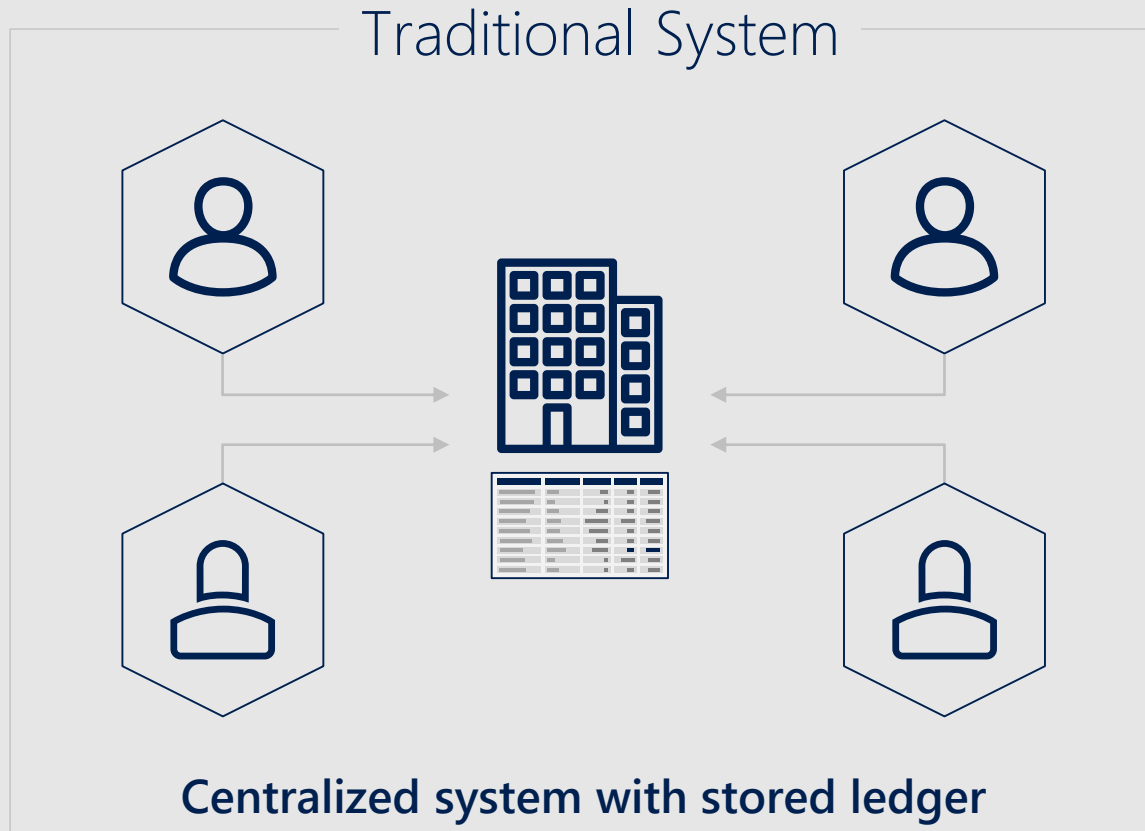
Example ledger



**Entire network
has same ledger**

Data is shared in a blockchain network

- Traditional ledgers are centralized and use 3rd parties and middlemen to approve and record transactions
- Blockchain safely distributes ledgers across the entire network and does not require any middleman



Why does it matter for business?

There is massive opportunity to improve shared business processes:

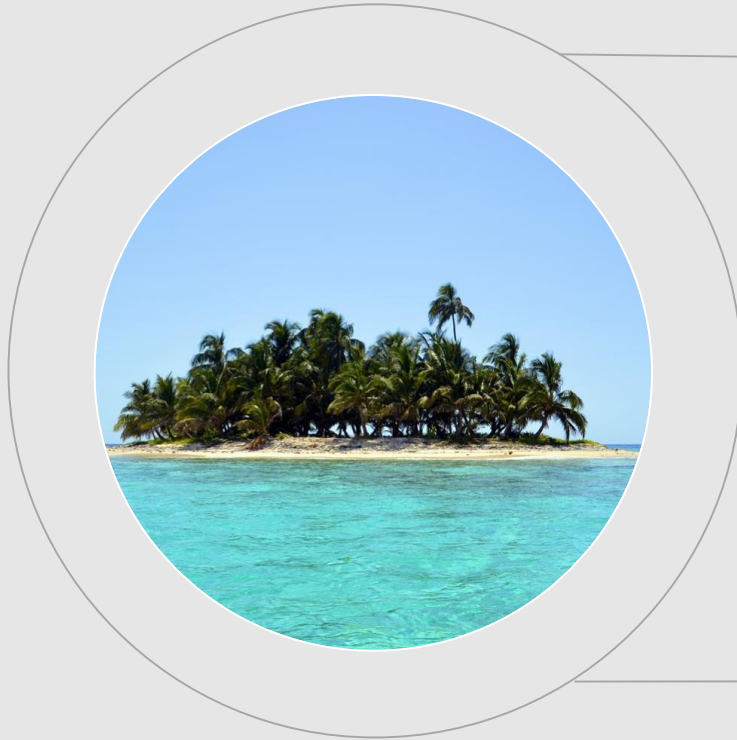
\$280B in banking industry fines
since 2009

\$21B cost of tax return fraud in the U.S.

48M illnesses from contaminated food
in the U.S. each year

Why isn't everyone using blockchain right now?

Blockchain wasn't built for enterprise



◆ Ledgers

Ledgers designed for public network lack the performance, confidentiality, and governance capabilities needed for commercial use

◆ Smart Contracts

Smart contracts were not designed to leverage existing enterprise tools and skill sets

◆ Integration

There are a number of challenges to integrate a blockchain with existing IT architecture

So, how do I build with blockchain?

4 key questions when starting any blockchain project



Does Blockchain
apply to my
scenario?

What technology
should I build on?

How do I translate
workflows into
smart contracts?

What does it take
to build a distributed
app and connect
it to my existing
infrastructure?

The first question is...



Does Blockchain
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What does it take
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Applications have similar patterns, across industries



The second question is...

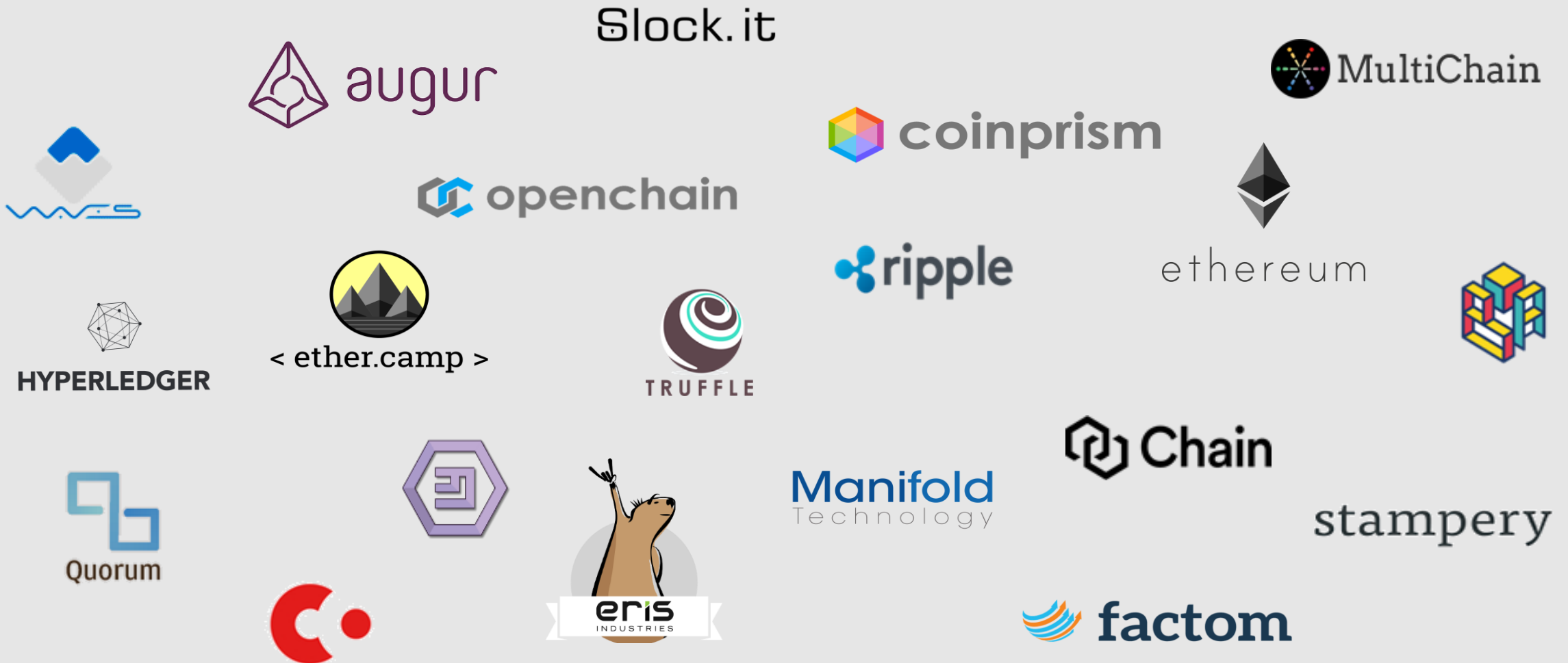
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Choose the ledger technology that meets your needs



Deploy in the topology of your choice

1

Dev/Test: Enable developers to get started

Single node (virtual machine)

2

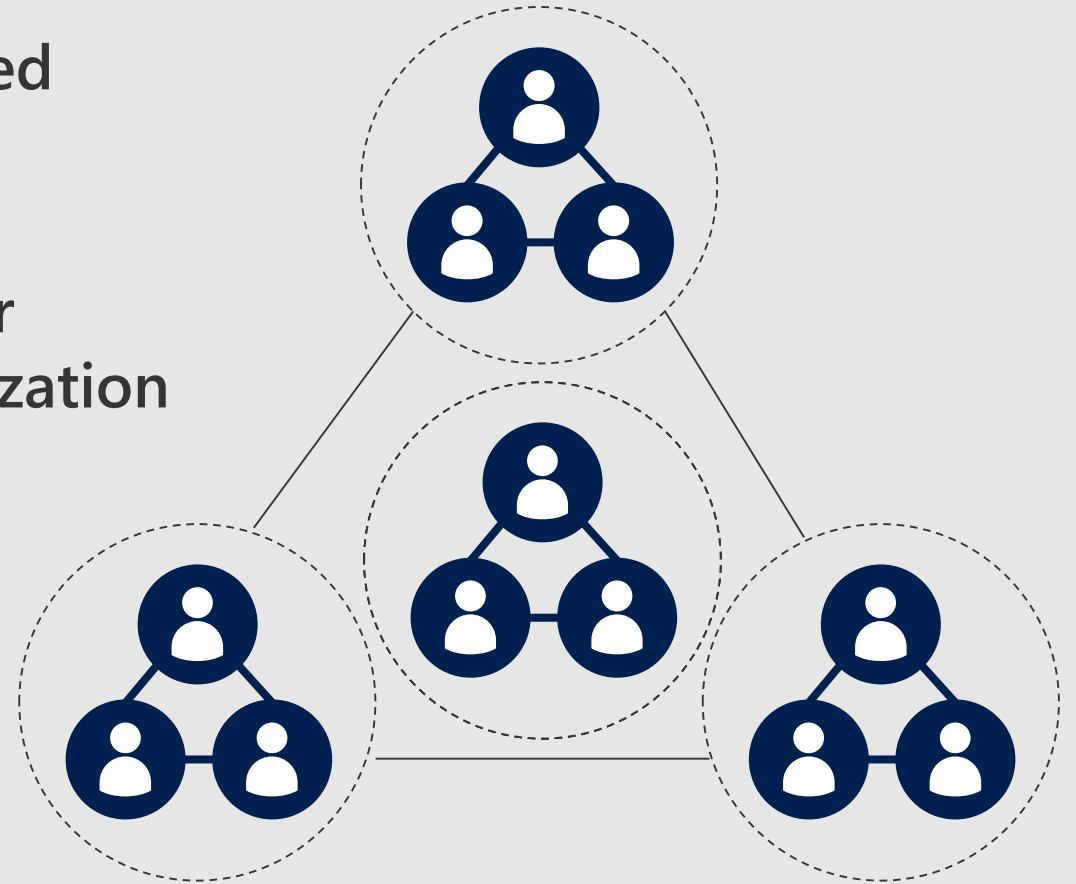
Single Member: Simulate production for multiple divisions within a single organization

Multi-node across single region

3

Multi-member: Collaborate between multiple divisions and organizations

Multi-node across multiple regions, Azure subscriptions, and/or organizations



Overcome technology gaps

3 – Main Challenges to Enterprise Adoption

Scalability

Database-like speeds for
transaction throughput
and latency

Confidentiality

Richer and more flexible
confidentiality models

Consortium Governance

Configurable constitution
to govern membership

The third question is...

Does Blockchain
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What technology
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How do I translate
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What does it take
to build a distributed
app and connect
it to my existing
infrastructure?

Today, you can codify a workflow as a smart contract

| NEW/USED | YEAR | MAKE / MODEL | ODOMETER |
|------------------|------|------------------|----------|
| Used | 2007 | FORD Focus ZX4 S | 45245 |
| LIC. NO. A1D5484 | | | |

The words "our," "we" and "us" refer to the creditor/seller in this contract, or upon any in this contract. We sell you the motor vehicle described above on credit. The credit price you agree to buy the vehicle on credit and pay the Total Sale Price according to the terms each is together and individually responsible for all agreements in this contract.
SEE OTHER PAGES FOR ADDITIONAL TERMS AND AGREEMENTS.

| A. FEDERAL TAX | |
|---|--|
| ANNUAL PERCENTAGE RATE: The cost of your credit as a yearly rate. | FINANCE CHARGE The dollar amount the credit will cost you. |
| 21.533 % | \$2,553.84 |

| B. | YOUR PAYMENT |
|---------------------|-------------------|
| Number of Payments: | Amount of Payment |
| One Payment of | \$500.00 |
| One Payment of | |
| One Payment of | |
| 47 | \$156.83 |
| One final payment | |

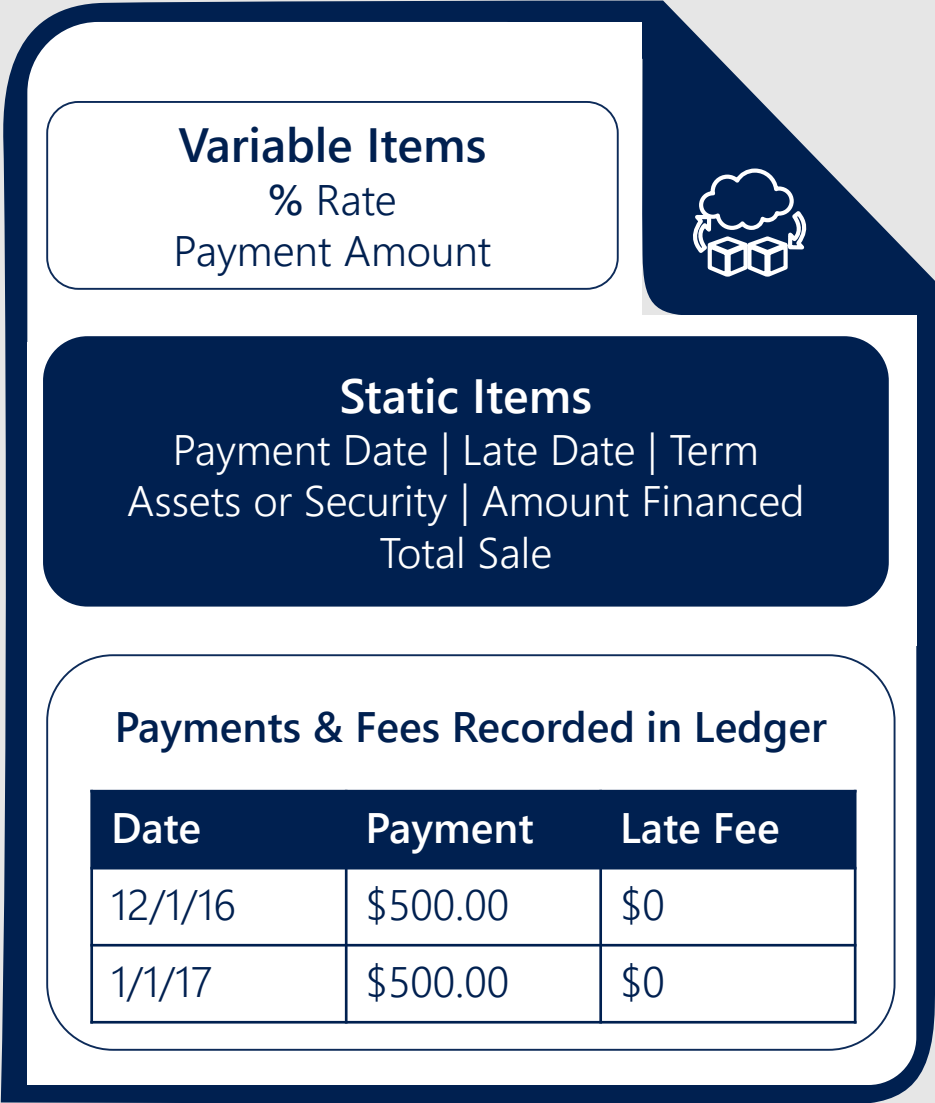
| C. |
|---|
| SECURITY: You are giving a security interest in any payment is more than 10 days late you must pay the full amount of the loan. PRE-PAYMENT: If you pay early, you may be entitled to a refund of the unearned portion of the finance charge. See the scheduled date and prepayment refunds. |

I warrant and agree that upon closing of this sale of comparable sales.

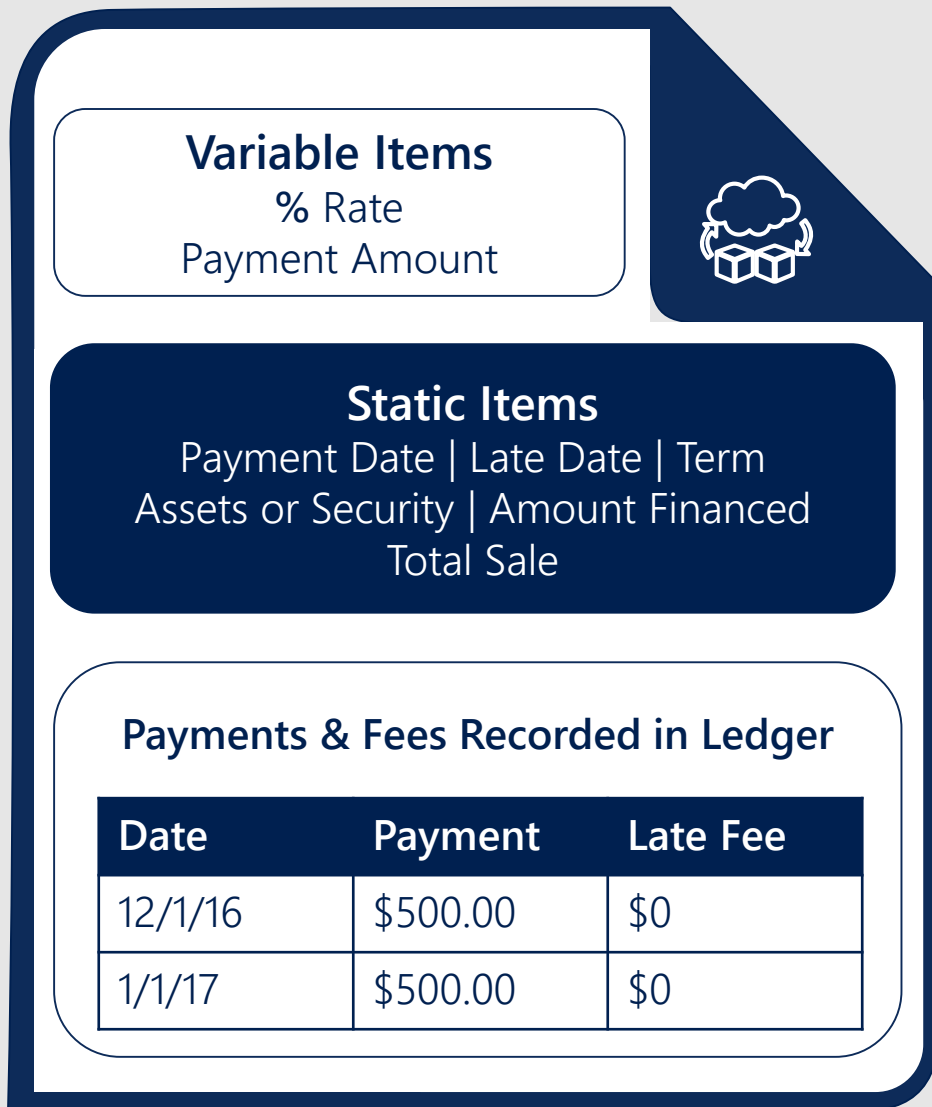
Daniel Sullivan
(Signature)

Janet K Sullivan
(Signature)

MORTGAGOR:
Daniel Sullivan
DANIEL S SULLIVAN
Individually
Janet K Sullivan
JANET K SULLIVAN
Individually



But it cannot deliver enterprise security or scale



Security

Proprietary code stored in shared data layer.

Unable to call off-chain data

Scale

Storing business logic on-chain means that it has to be re-written for each chain, limiting scaling

You need a re-imagined architecture



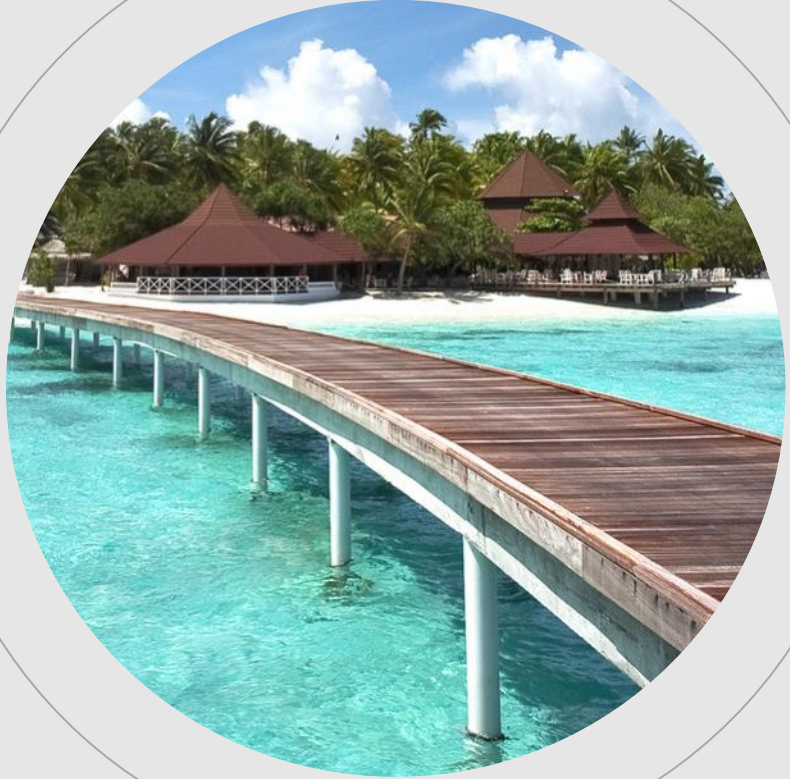
The fourth question is...

Does Blockchain
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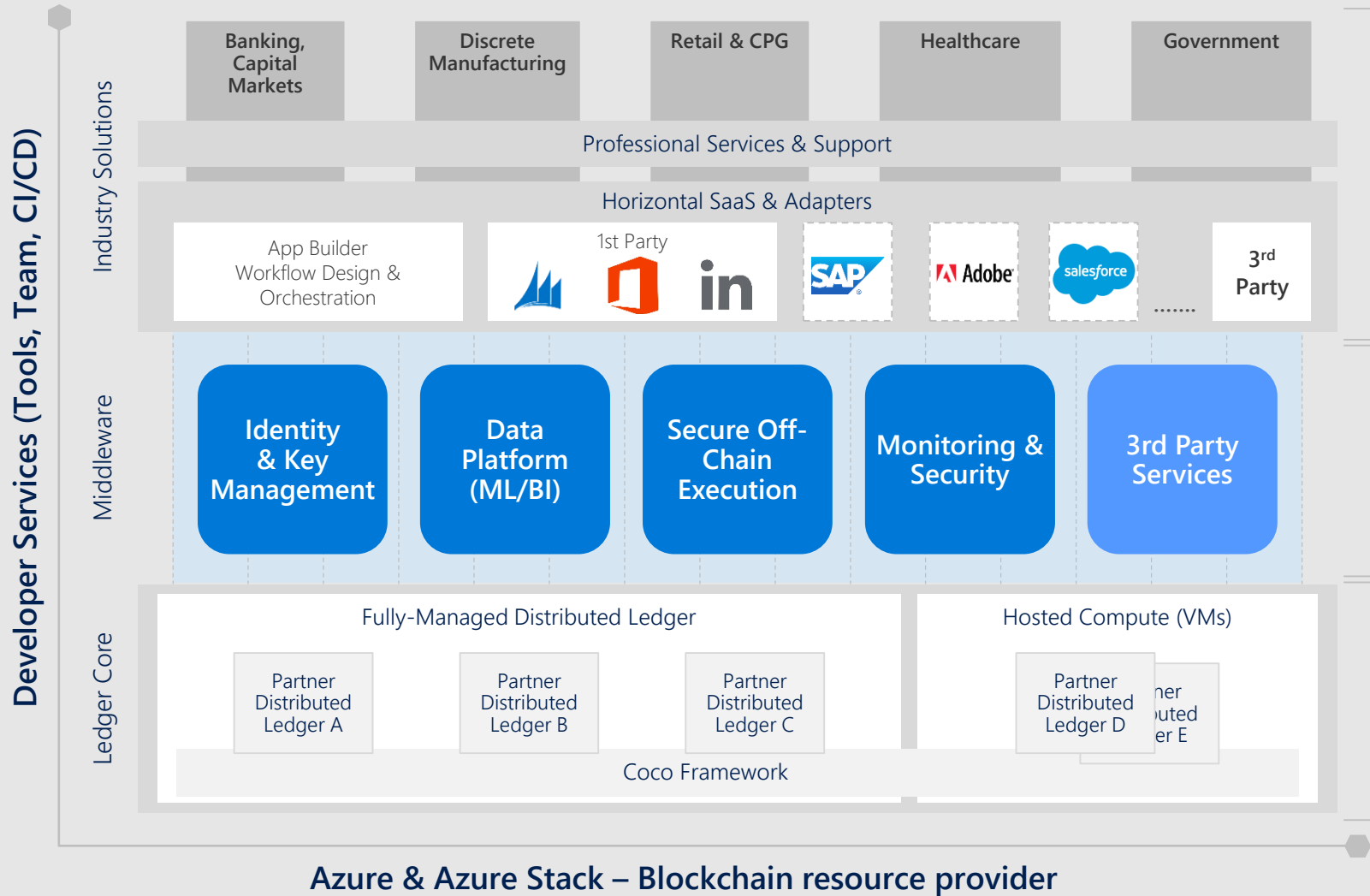
What does it take
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infrastructure?



◆ Getting Off the Island

Lab projects and PoCs can be disconnected islands. Customers want bridges

An enterprise-friendly platform



Connect to existing apps and workflows

Coordinate with relevant tools

Fully managed enterprise ledgers

A network diagram consisting of five white circles connected by dotted lines. The circles are positioned at various points across the upper half of the image, with lines connecting them in a non-linear fashion, suggesting a complex network or flow.

Accelerating Adoption

But it is also a world of
Opportunity

Remains
a Challenge



The KPMG Microsoft Alliance

The KPMG Microsoft Alliance



Successful adoption of Blockchain will require:

Industry Players

Technology Solution Enablers

Business Practice Experts

And their Resources, Infrastructure
and Business Experience

The KPMG Microsoft Alliance

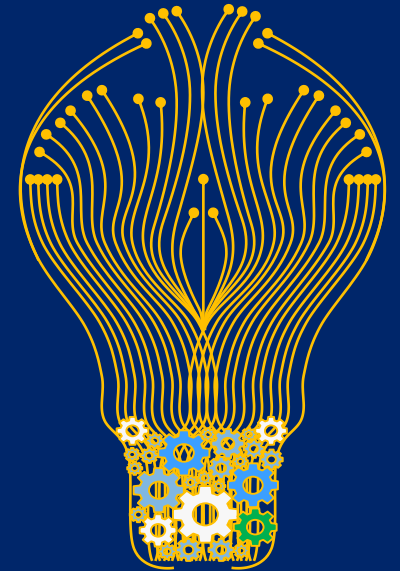
Microsoft and KPMG are guided by similar goals to make Blockchain adoption a success ...



- Strong market reputation
- Strong in the financial services spectrum
- Insights and value across the solution lifecycle
- Deep understanding of business processes, controls and the regulatory environment



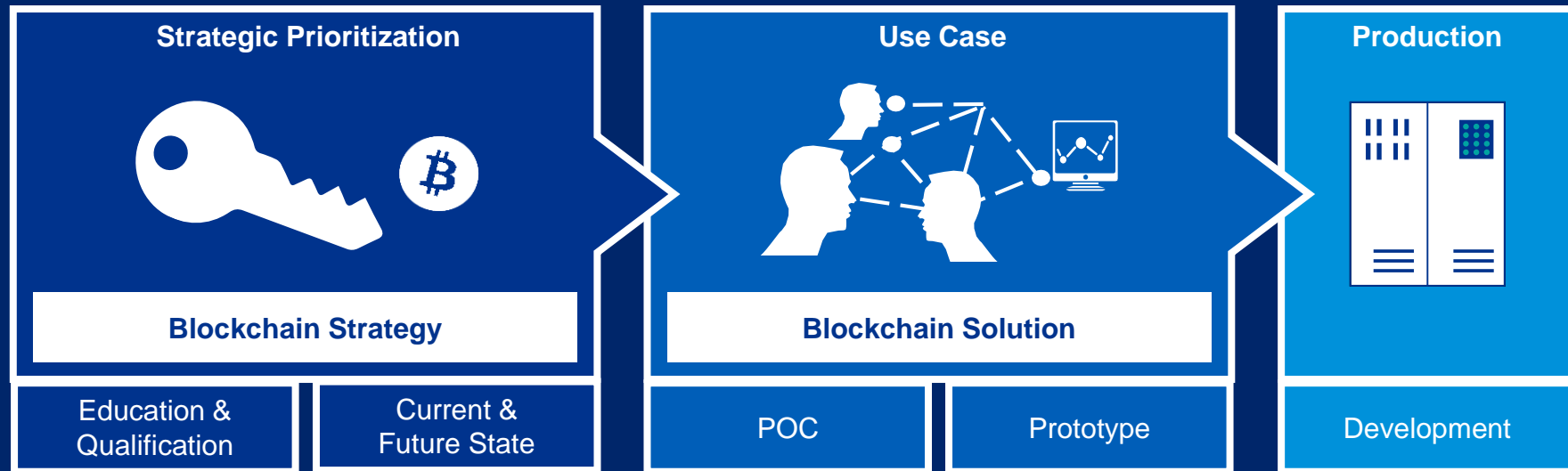
- Leading solution provider for BlockChain sandbox
- Market credibility and deep penetration
- Cloud adoption
- Broadened focus



The KPMG Microsoft Alliance

KPMG REALIZED Blockchain Solutions

Solution Development Steps



Key Tasks performed

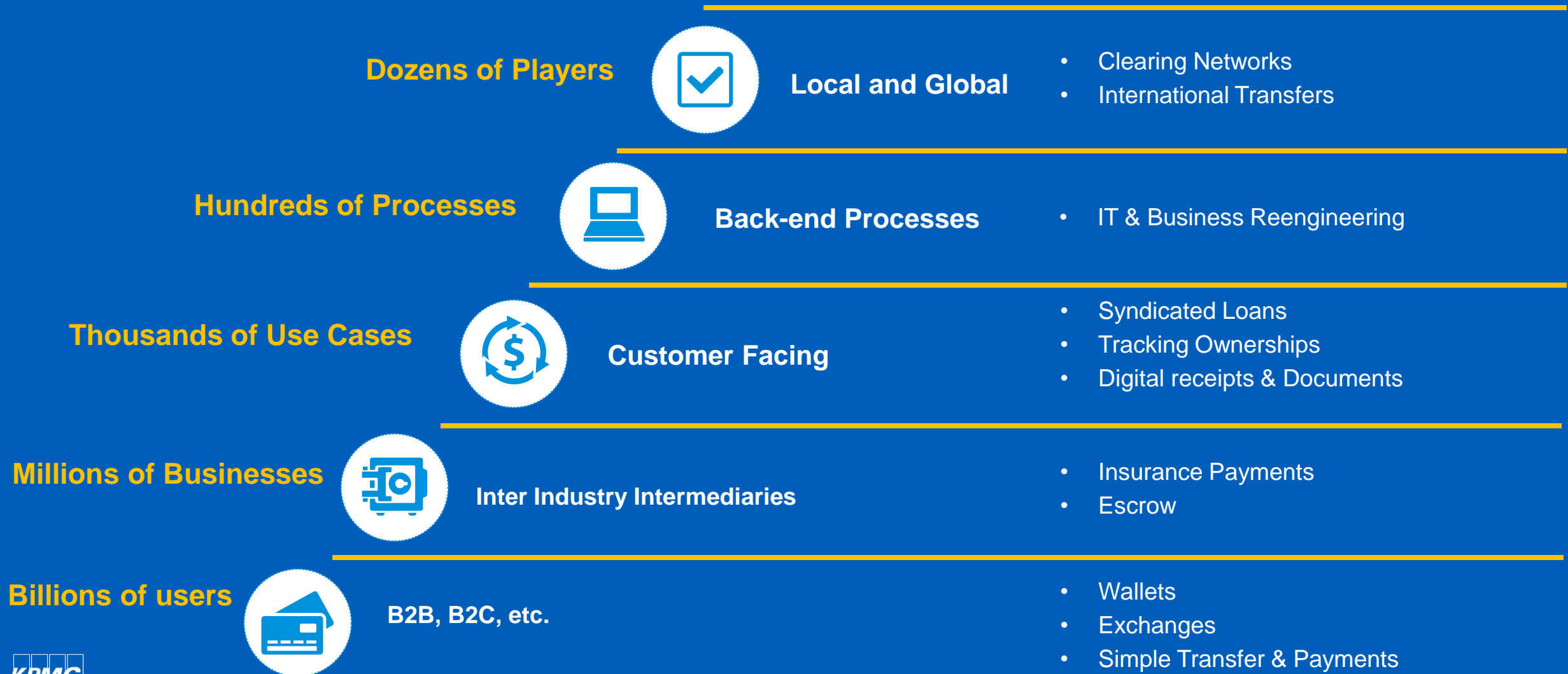
| | | | | |
|---|---|---|---|---|
| <ul style="list-style-type: none"> — Blockchain learning — UC Candidates — Sponsor business solution | <ul style="list-style-type: none"> — Map current state — Identify pain points — Business Case — Confirm project | <ul style="list-style-type: none"> — Define requirements — Evaluate ecosystem — Conceptual POC | <ul style="list-style-type: none"> — Code solutions — Confirm and execute test plan — Development plan | <ul style="list-style-type: none"> — Define production migration plan — Implement production deployment |
|---|---|---|---|---|

Expertise, Technical Capabilities, and Alliances

| | | | | |
|--|--|--|--|--|
| KPMG DLS services | | | | |
| KPMG domain specialists | | | | |
| KPMG Lighthouse (Data Engineering) | | | | |
| Microsoft Partner – Blockchain As A Service | | | | |
| Development Partners (select leading blockchain technology firm) | | | | |

Focus on Financial Services...

Blockchains & DLTs potential for Financial institutions



.... And Beyond

Applications and benefits beyond financial services include attestation and identity management



Food supply chain

The **tracked history of transactions** can confirm to a food retailer if their goods are genuinely organic or are produced from the area which is advertised



Diamond industry

The blockchain has the ability to **track each diamond's unique attributes**, giving transparency to where it has come from and regulating the retail sale of scarce stones



Music Piracy

The **monitoring of transactions** by the blockchain community can stop the illegal transfer of music from one party to another

The (Business) Use Case

Qualifying a Use Case

Business Process criticality

Trade volume, Business impact, Process criticality,
Relevance to industry / market

Low levels of end-to-end
automation

Manual processing due to intrinsic nature of
business, Opportunity for optimization

Require intermediation and
third party trust

Single point of dependency on external
intermediary, Delays in settlement process

Eligible for dematerialization

Involvement of multiple stakeholders, Multiple
information sources, Internal and external review
and reporting requirements

Scalability & Risk reduction

Ability to scale POC to broader market
environment, Efficiency gains, Reduced risk

Use Case - DLS Project- Luxembourg Stock Exchange

The distribution value chain counts many intermediaries between final investors and asset managers that increase the cost of distribution

Business Situation



- Develop investment fund order processing platform.

KPMG Approach



- Co investment between The Luxembourg Stock Exchange, KPMG Luxembourg and InTech to develop this platform.

What is the use case?



- The DLT is used to process order with smart contracts and store the investor register
- Benefits: More transparency for all players, lower operational costs and higher efficiency

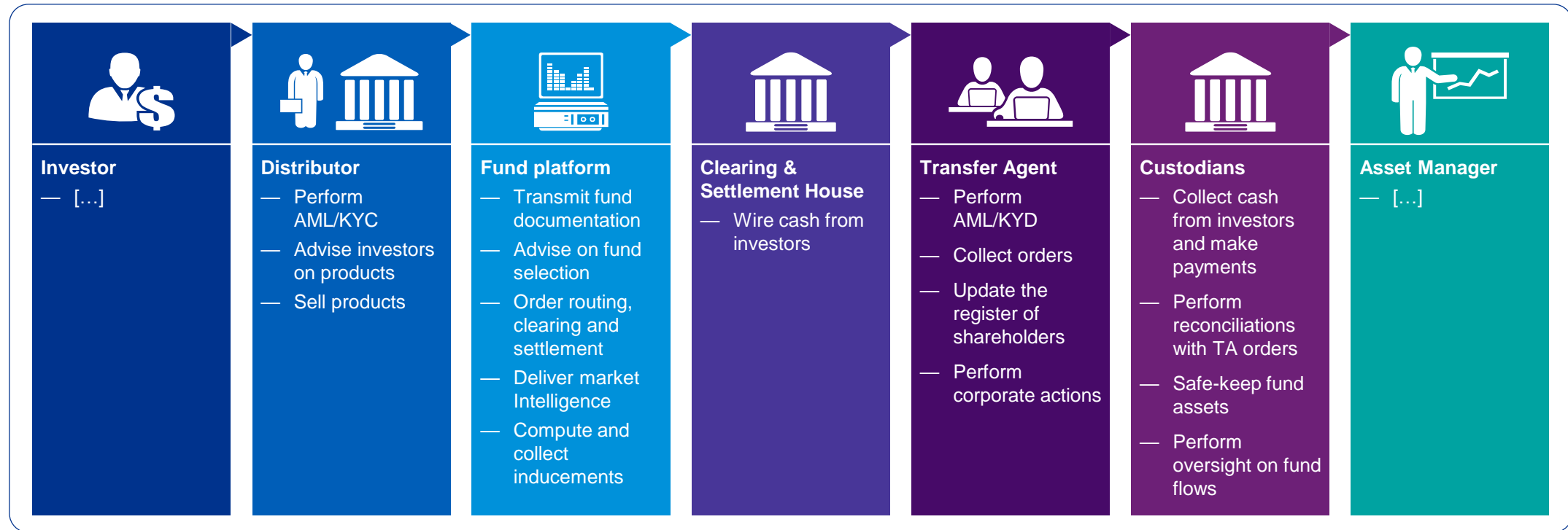
Technologies and Partners used



- Platform: Ethereum
- Tech partners: Intech

Use Case - Fund distribution value chain

The distribution value chain counts many intermediaries between final investors and asset managers that increase the cost of distribution



Our message

The current model will significantly evolve in the next years with the implementation of Mifid II and the need for Asset Managers to reduce operational costs

Use Case - Fund distribution value chain

MIFID II: Deep strategic changes - disrupting the whole fund distribution business model

Distributors

- Might close the open architecture model and only offer in-house products to continue perceiving inducements
- Create FoFs to replace inducements by management fees
- IFAs will charge an upfront fee to end investors

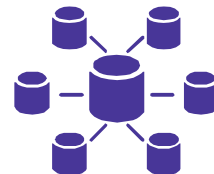


Fund Managers

- Challenging to distribute funds for independent fund houses as distributors are likely to favor in-house products
- Start directly targeting end investors
- Develop tools to help distributors selling their products

Distribution Platforms

- Platforms will lose their principal source of revenue: Inducements
- No clear new business case



Retail Investors

- Might end up losing their IFAs as they won't be profitable anymore
- Become self-directed investor as they do not wish to pay an upfront fee
- Otherwise limit their portfolio to one brand/asset manager
- Expected to use more D2C platforms



Use Case - Fund distribution value chain

The Concept

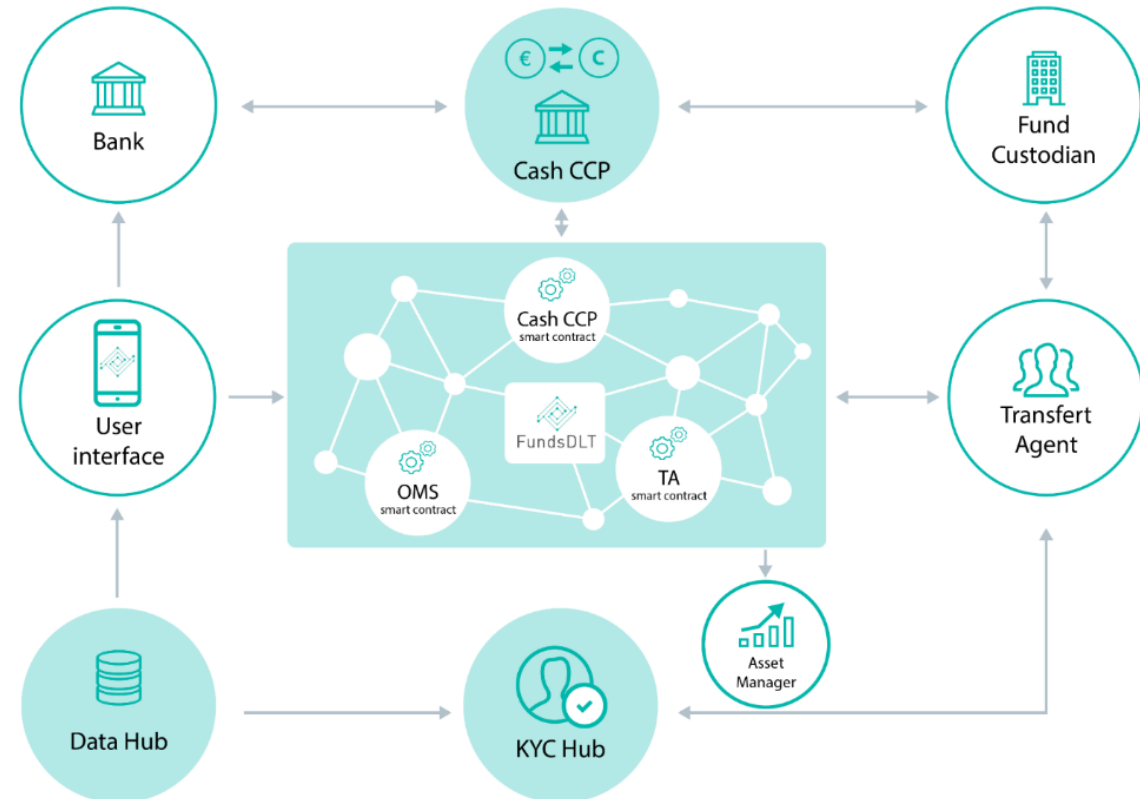
Concept

- Roll out a **viable model** with the As-Is Eco system
- Incorporate **new concepts** (Data and KYC Hub)
- Experiment an order routing, settlement and investor register **market infrastructure**

Objectives

- Offer a platform enabling **digital transformation**
- Provide **transparency on final investors** for Asset Managers to design with distributors better products
- **Streamline operational processes** to ease access to investment funds

Eco-system

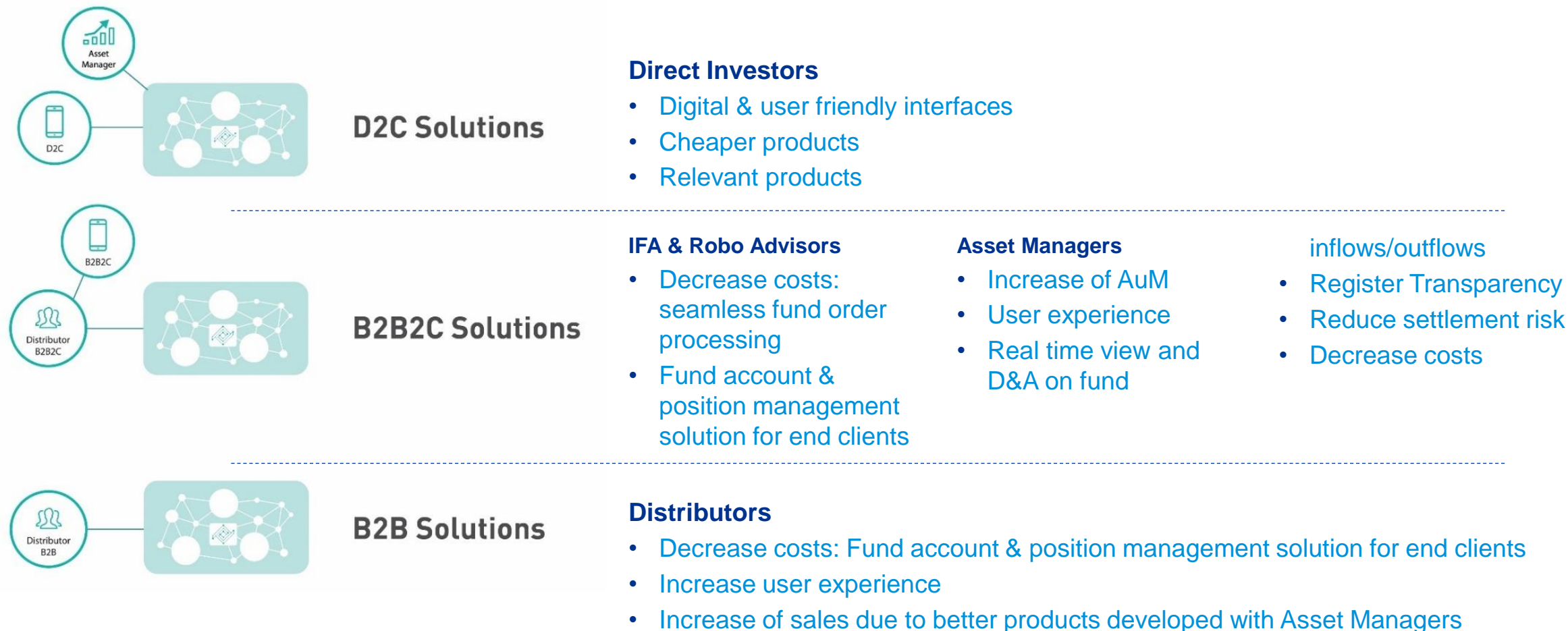


FundsDLT automates the clearing & settlement process as well as the activities of the Transfer Agent.

For the first time, Asset Managers have a real-time view on their subscription & redemption orders.

Use Case - Fund distribution value chain

FundsDLT aims to offer a solution to manage fund transactions and update fund's register as well as the technology to connect to the platform



Use Case - DLS Project- Luxembourg Stock Exchange

The Involvement

Lux Stock Exch.

- Administrating the network
- Definition of concept

Intech

- Develop APIs – Order, Cash, Onboarding/KYC
- Develop Smart Contracts – Cash CCP, TA, OMS
- Finalize Servers and Nodes
- Develop Interfaces
- Testing with Asset Managers
- Cyber resilience

KPMG

- Use case development and value chain future state
- Business case and FundsDLT operating model
- Governance, security, regulatory and business requirements
- GTM strategy and Asset manager meetings
- Support testing with Asset Managers
- Non-Audit client onboarding and integration
- Project PMO and governance model

Use Case - Fund distribution value chain

FundsDLT Observation Committee – List of Attendees

- Aberdeen
- Allianz Global Investor
- Amundi
- Aviva Investors Luxembourg SA
- Axa Investment Management
- Banca Mediolanum
- Banque Centrale du Luxembourg
- Banque de Luxembourg
- Blackrock
- BNP Paribas Asset Management Luxembourg
- BNP Paribas Securities Services (Succ. Luxembourg)
- CACEIS Bank Luxembourg SA
- Capital Group
- Carmignac
- CITCO S.A.
- Citibank Europe plc, Luxembourg Branch
- Credit Suisse
- DEKA Bank
- Deutsche Asset Management
- Ethenea
- European Capital Partners Luxembourg S.A.
- European Fund Administration
- Fidelity International
- Franklin Templeton Luxembourg S.A.
- FundPartner Solutions (Europe) S.A.
- GAM (UK) LTD.
- Goldman Sachs
- Hargreaves Landsdown
- Henderson
- HSBC SECURITIES SERVICES (Luxembourg) S.A.
- International Financial Data Services (Luxembourg) S.A
- Invesco
- Investec Asset Management
- JIAM
- JP Morgan Asset Management (Europe) S.à.r.l
- Jupiter
- La Française
- M&G
- Mediolanum
- Natixis Asset Management
- Nordea
- Northern Trust
- OFI AM
- Paypal Inc.
- Pictet & Cie (Europe) S.A.
- PIMCO
- Prodigy LLP
- RAM Active Investments S.A.
- RBC Investor Services Bank S.A.
- Robeco
- Schroders
- SG Securities Services Luxembourg S.A.
- T. Rowe Price
- The Bank of New York Mellon (Luxembourg) S.A.
- UBS Luxembourg Financial Group Asset Management S.A.
- Union Investment Service Bank AG
- Vanguard
- Kempen
- PIMCO
- Prodigy LLP

Examples of Ongoing Development

| Sector | Proposition | Description | Leading country |
|--------------------------------|-----------------------|---|-----------------|
| Banking, Capital Markets, & AM | Mortgages | Origination to securitization | U.S. |
| | Remittance | Cross border remittances | DE |
| | Trade Finance | Trade finance including supply chain | AU |
| | Derivatives | Execution through to post trade | U.S. |
| | Debt & Equity | Clearing and settlement platform | AU |
| | Funds | New funds distribution platform – origination through to administration | LX |
| | Trusts | Recording Trusts structures using a blockchain | NL |
| | Pensions | Blockchain-powered national pensions platform | NL |
| Insurance | P&C Claims Adjustment | Claims verification through to payments | U.S. |
| | Reinsurance | TBC – Side car fund raising and administration | - |
| Functional | KYC | Identity management on the blockchain | SG |

The Conclusion

**Its About Seizing
New Potential**



Accelerating your Blockchain Projects with Microsoft and KPMG

Thank you

—
November 2nd, 2017



Microsoft is committed to your blockchain journey



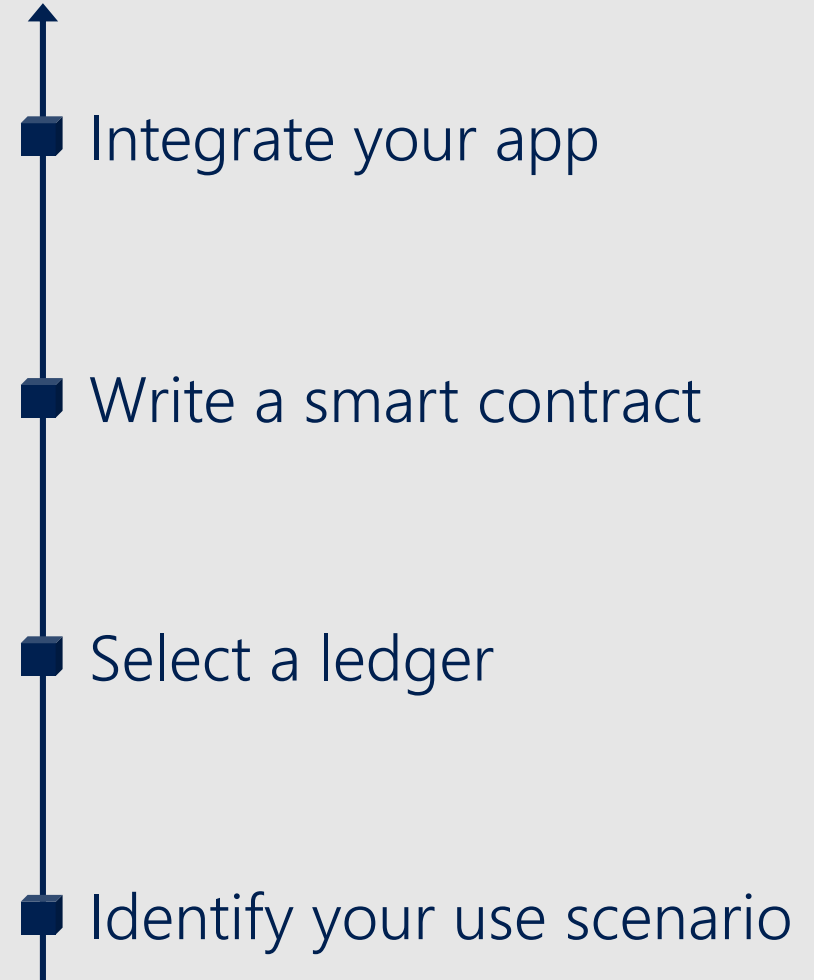
Blockchain **on your terms**



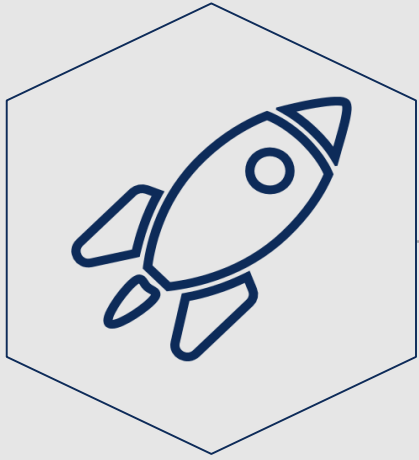
Integrated with your business



With **enterprise assurance**



Learn more



Check out the
Azure Blockchain
App Builder and
[request early
access](#)



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