



Cloud computing powered blockchain

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Market Challenges

Hype

Lots noise of press, announcements, reports, etc.

Immature

Many offerings are **new** or **experimental** targeting potential of great things

Few make it to Production

Multiple obstacles can make it difficult to move beyond a technical proof of concept

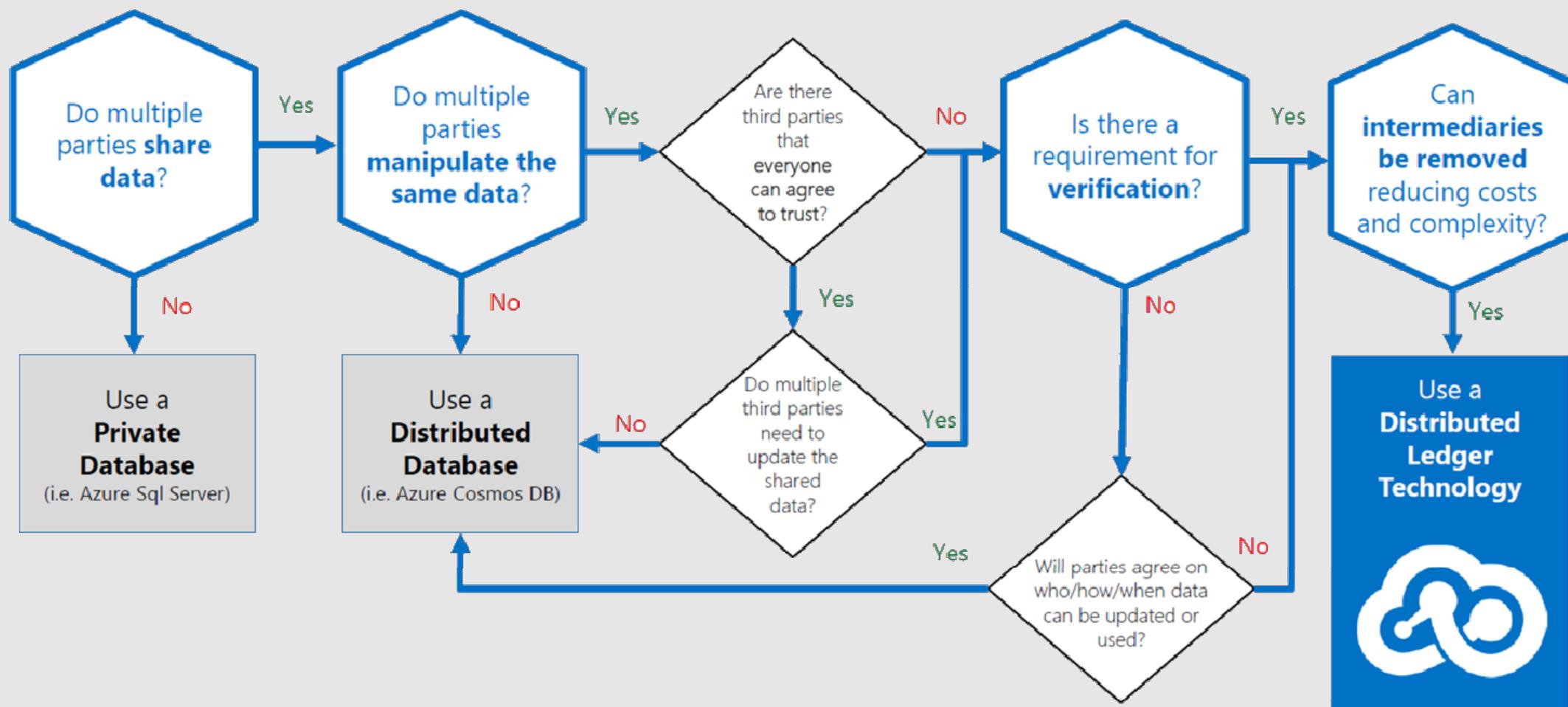
A Diverse Ecosystem

- Over 70 protocols
<10 most often used
- Open source, community projects, startups, and from more mature companies
- A fast-moving market with a rapid pace of innovation



Recognizing scenarios

Answering a few questions can determine if Blockchain is appropriate



Blockchain shows tremendous potential across industries

Manufacturing



Asset tracking
Real time auction
for supplier
contracts
Supply chain
transparency

Retail



Loyalty tracking
Product
provenance
Logistics
management

Insurance



Claims
Management
MBS/Property
Payments
Fraud detection
Automated
underwriting

Banking and Capital Markets



Bond Issuance
Trade Finance
Loan Syndication
Post Trade
Settlement
Cross Border
Payments
Derivatives Trading
KYC/AML

Government



Licensing and ID
Benefits
distribution
Aid tracking
Military security

Health



Personalized
medicine
Records sharing
Compliance

Bank Hapoalim | Streamline the bank guarantee process

Challenge

- Bank Hapoalim wanted to improve their process for issuing bank guarantees that are required for large purchases like real estate
- Traditionally, customers had to visit a branch multiple times to move through the application process

Strategy

- Bank Hapoalim and Microsoft developed a real-time blockchain enabled platform to collaborate on documents with customers
- The solution let customers and banks update documents securely without in-person verification

Results

- Blockchain technology improved the customer experience and confidence in the banking system by enabling them to receive automated, digital documents without the need to repeatedly visit a physical bank branch
- The solution created a competitive advantage and cost savings for Bank Hapoalim by streamlining existing systems and services

“The use of Blockchain technology will significantly improve the customer experience and the level of trust in the banking system”

— Arik Pinto, Chief Executive Officer of Bank Hapoalim



Bank of America Merrill Lynch | Simplify commercial trade finance

Challenge

- Bank of America Merrill Lynch needed to reduce the time to issue a Standby Letter of Credit (SBLC) for Microsoft Treasury as Microsoft's partner channels grew in the cloud age
- The traditional process required costly and time-consuming manual steps involving multiple parties and took between 3-5 weeks

Strategy

- Bank of America Merrill Lynch and Blockchain Engineering established the first blockchain-powered transaction engine between a major corporate treasury and a financial institution

Results

- Issuance time for an SBLC was reduced to 3 days
- Blockchain created trust and decreased counterparty risk by automating authentication of partner financial details
- The solution further provided regulators with a real-time view of essential documents to assist in enforcement and AML activities



"By working with Bank of America Merrill Lynch on cloud-based blockchain technology, we aim to increase efficiency and reduce risk in our own treasury operations"

— Amy Hood, Chief Financial Officer at Microsoft

Moog | Improve provenance tracking for critical items

Challenge

- Moog needed a secure system to transfer component plans to customers for 3D printing in the field
- Customers must be able to confirm the provenance and telemetry of mission-critical parts
- Each piece is precision crafted under extremely small tolerances, so quality and integrity are of the utmost importance

Strategy

- Moog and Microsoft designed a blockchain-enabled platform to tokenize physical assets for a digital supply chain
- The technology enabled parts and their associated design plans to be tamperproof and resistant to hacking

Results

- Blockchain technology enabled tracking of digital and physical assets along the supply chain to provide provenance and authenticity on a per part basis
- The solution promoted trust in product quality and performance while preventing tampering, reducing waste, and saving time

MOOG

“Blockchain is an enabler for us”

— James Regenor, Transformative Technologies Director of Moog

Singapore Airlines | Expand customer loyalty

Challenge

- Singapore Airlines wanted to build up their customer participation and loyalty by making it easier for customers to redeem their frequent-flyer rewards points with a first-of-its-kind blockchain initiative
- They also needed a way to manage their ever-expanding network of partners

Strategy

- Singapore Airlines partnered with KPMG Digital Village and Microsoft to create a rewards program that linked customers' digital wallets to their KrisFlyer reward miles using blockchain

Results

- Customers can use their digital KrisFlyer miles for point-of-sale transactions throughout an expanded retail partner network
- Increased mileage program participation and loyalty to the Singapore Airlines brand



"This groundbreaking development in which we will be using blockchain technology to 'digitalise' KrisFlyer miles is a demonstration of the investment we are making to significantly enhance the digital side of our business for the benefit of our customers"

— Goh Choon Phong, Chief Executive Officer of Singapore Airlines

Maersk | Secure marine insurance

Challenge

- Maersk wanted to eliminate duplication, inefficiency, lack of transparency, data fraud, and errors across the plethora of parties interacting in marine insurance
- Additionally, they sought to manage compliance across multiple regulatory bodies and jurisdictions while balancing insurance rates and costs

Strategy

- Maersk, EY, Guardtime, and Microsoft developed a real-time blockchain enabled platform for marine insurance
- The solution streamlined claims and settlement processes, while reducing errors

Results

- Real-time visibility into the location, condition, and safety of high-value assets moving around the world
- Accurate, dynamic, and fair underwriting and pricing based on that visibility
- Streamlined regulatory reporting and compliance
- Accurate and transparent data sharing among all relevant stakeholders with audit trail
- Capital freed from poor credit system

“It is a priority for us to leverage technology to streamline and automate our interaction with the insurance market. Insurance transactions are currently far too tedious and frictional. The distance between risk and capital is simply too far”

— Lars Henneberg, VP, Head of Risk and Insurance of A.P. Moller-Maersk



Webjet | Reduce booking errors

Challenge

- Because of the high volume of hotel bookings that pass through Webjet every day, they often experienced booking discrepancies between their systems and those of hotels
- Booking errors negatively affect customers' experiences, undermine trust between Webjet and its partners, and can have serious financial consequences

Strategy

- Webjet and Microsoft developed a first-of-a-kind blockchain solution to create secure, independent transaction records that all parties can see – known as Smart Contracts, they streamlined the booking and payment process, and reduced errors

Results

- Blockchain reduced the risk of data inaccuracy, boosted security and efficiency, and enhanced trust and accountability between Webjet and its partners
- The solution gave Webjet a competitive edge and set a new industry standard
- Webjet is now capable of facilitating transactions across the travel industry and selling its solution into other sectors



"Microsoft's ongoing investments in building the industry's most trusted cloud platform around the principles of security, privacy and control, compliance and transparency, along with its deep heritage in guiding businesses, including Webjet, through periods of significant IT transformation made the decision to go on this journey with Microsoft a no-brainer"

— John Guscic, Managing Director, Webjet

3M | Validate your product's authenticity

Challenge

- 3M sought a solution to reduce tampering and prevent the introduction of counterfeit drugs into the pharmaceutical supply chain – which is a \$200 billion criminal industry
- Counterfeit drugs negatively impact brand reputation and overall revenue but, ultimately, they hurt unsuspecting customers

Strategy

- 3M and Microsoft leveraged Azure Blockchain to build an innovative service to track specially labeled packages through any supply chain
- Multilayer QR code labels were used to expose tampering and facilitate easy tracking

Results

- Blockchain technology improved visibility and security at each transfer to ensure products are authentic and free of tampering
- Real-time registry, validation, and custodial recordings combated counterfeits and eliminated the risk of fraudulent double selling through secure, attestable data



Nestlé | Optimize your supply chain

Challenge

- Nestlé wanted to reduce supply chain management costs associated with one of their flagship confectionary products while also making it easier for customers to see the journey of the product from farm to fork

Strategy

- Nestlé and Microsoft designed a blockchain solution to give them real-time visibility into their supply chain

Results

- Blockchain technology engaged the tactical and strategic angles of the supply chain to reduce costs, ensure quality, and increase revenue
- Nestlé enjoyed enhanced visibility into their confectionary export process and improved their ability to address inefficiencies and resolve disputes involving both suppliers and consumers

Utilidex Reimagines Energy Trading with Blockchain

Challenge

- The sector is becoming increasingly complex, with new suppliers entering the market.
- Markets have also suffered from increased volatility, while generation trends have shifted significantly towards renewable sources such as solar power.
- Changing dynamics of the market, and increasing value in energy flexibility.

Strategy

- Help customers buy, sell and optimise their energy in an open, transparent way.
- Worked with Microsoft to trial blockchain technology and prove the technology's application in buying and selling energy.

Results

- Utilidex's blockchain technology will:
- Let users analyse data on plants.
 - Make billing easier.
 - Show real-time market data.
 - Predict energy production.
 - Feature a personal digital assistant that offers instant alerts.

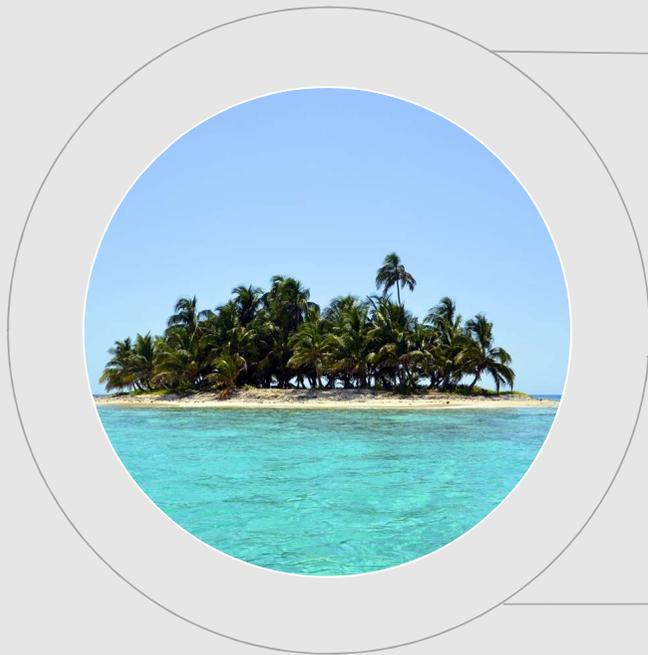


"This work is part of our broader ambitions to help customers buy, sell and optimise their energy in a very different way"

- Richard Brys, Chief Executive Officer of Utilidex

Why isn't everyone using
Blockchain right now?

Blockchain wasn't built for enterprise



◆ Enterprise-Grade Ledgers

Ledgers designed for public network cryptocurrencies 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

◆ Getting Off the Island - Integration

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

It's hard to bridge the gap and deploy blockchain in your business

Organization 1

Organization n

Existing SaaS tools



Client apps & devices



Enterprise ledgers



Because building an end-to-end blockchain app is a huge undertaking



Blockchain with Microsoft

Blockchain
on your
terms

- Open cloud
- The most regions
- True hybrid
- Deep partner bench

Integrated
with your
business

- Identity & key mgmt. with AAD and KeyVault
- Middleware support in Azure
- IaaS, PaaS & SaaS

For the
enterprise

- Secure off-chain integration
- Security, confidentiality, scalability
- Compliance

So we've taken steps to create a platform that would tackle those challenges



**Populated
preconfigured
networks**



**Integrated
relevant cloud
services**



**Built a
simple
interface**

We started by populating modular preconfigured templates and infrastructure

Ledger and topology choice



ethereum

HYPERLEDGER

parity



TRUFFLE



BLOCKSTACK



Quorum



Chain

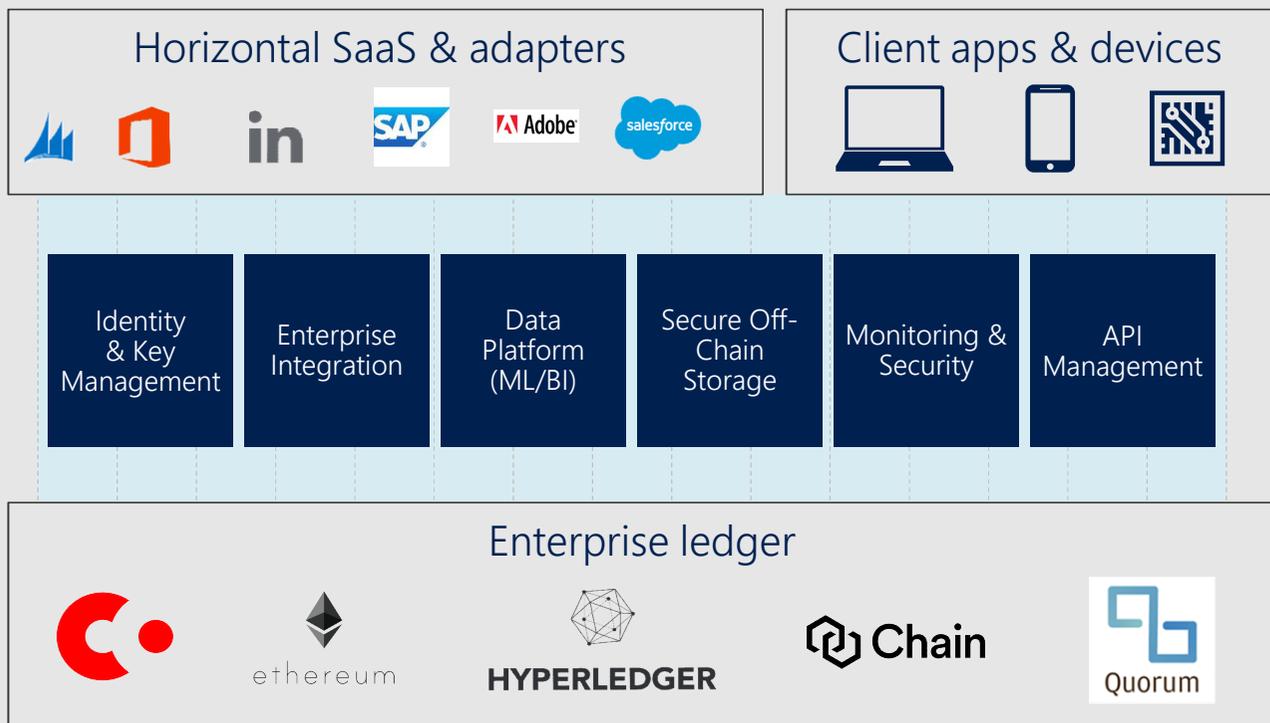


< ether.camp >

Choose the ledger that meets your needs

Deploy on flexible topologies (dev test, single-node, or multi-node) so you can expand when you're ready

Next, we enabled prebuilt connections to Azure and the tools you're already familiar with

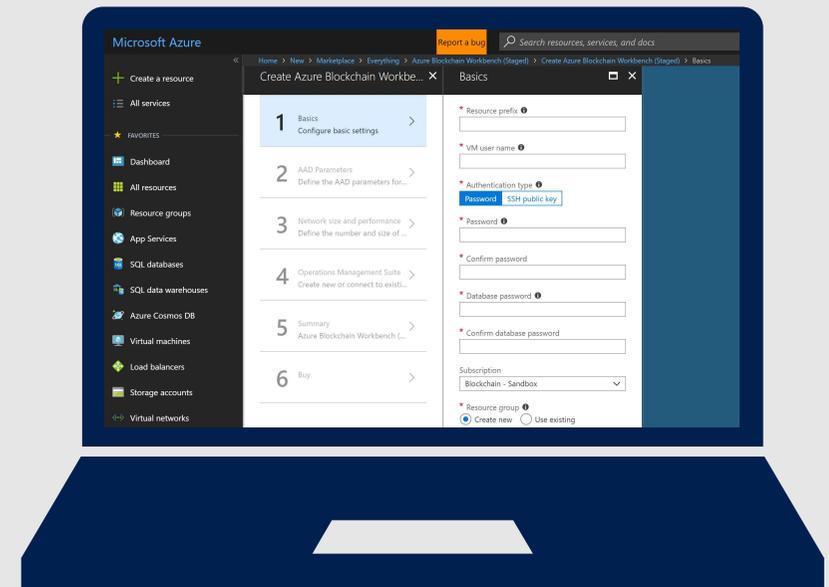
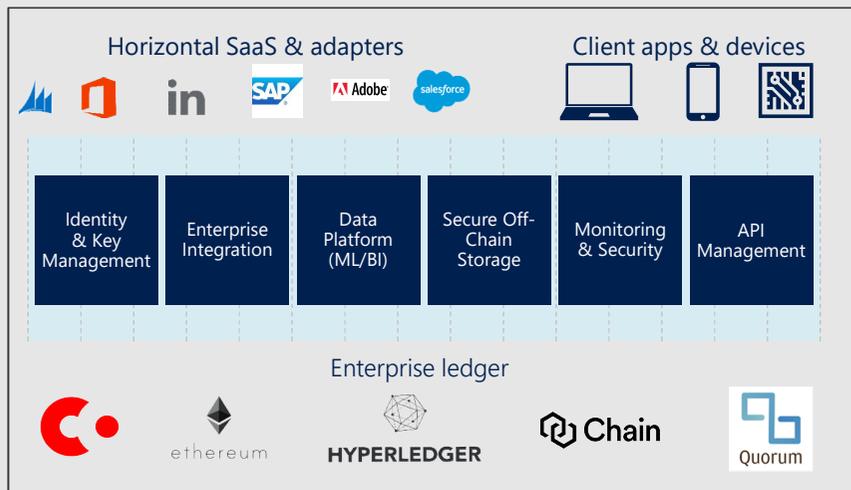


Quickly integrate with business apps

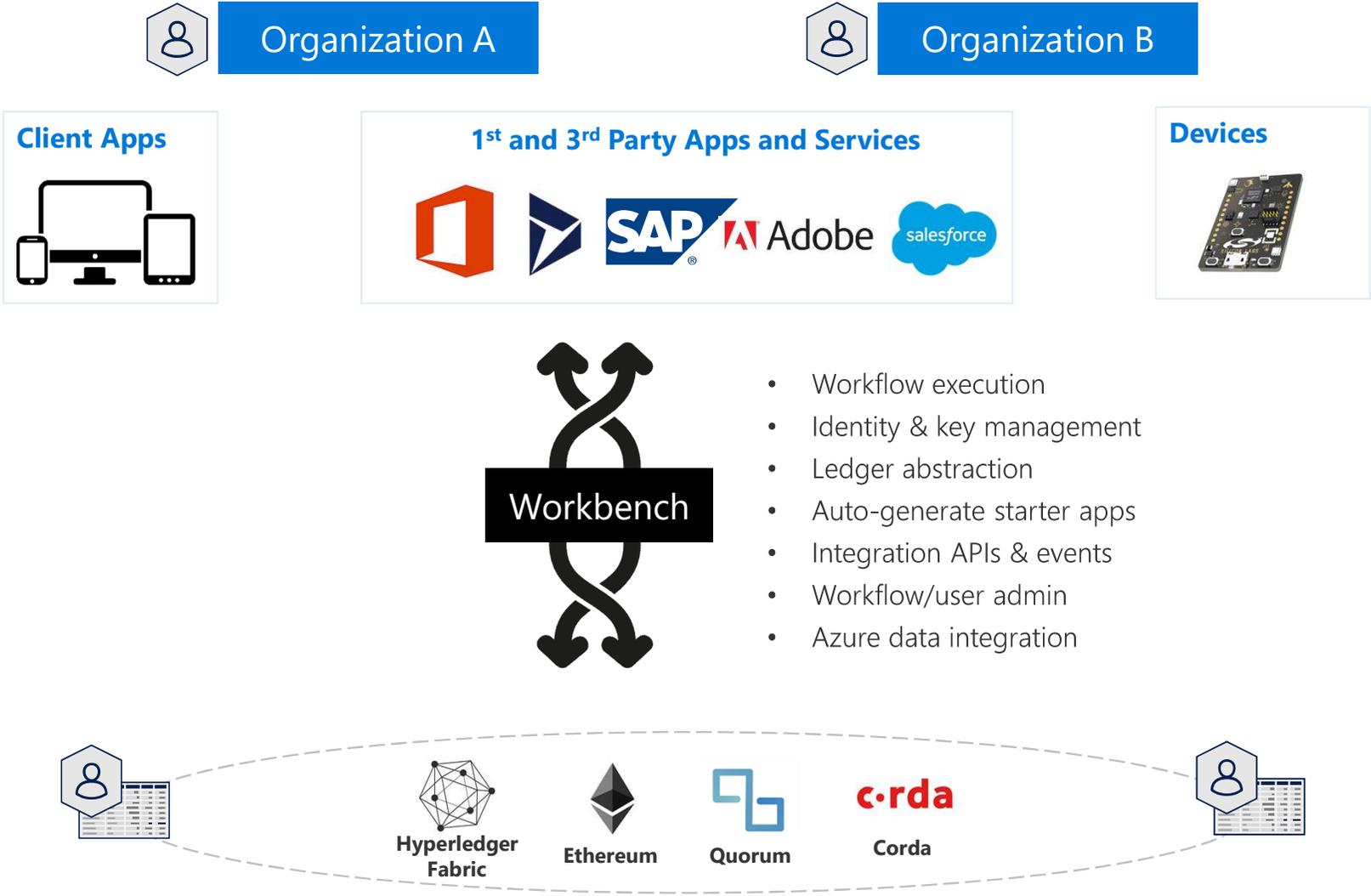
Connect to the cloud without the heavy lifting

Now, we've built a simple interface for deploying these services and authoring smart contracts

Azure Blockchain Workbench



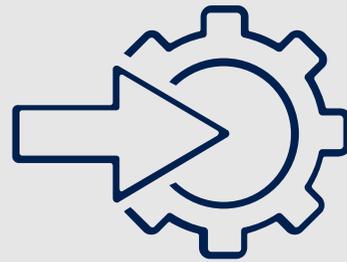
Accelerate development with scaffold and apps



Azure Blockchain Workbench offers significant benefits to developers



Simplify
development



Accelerate
time to value

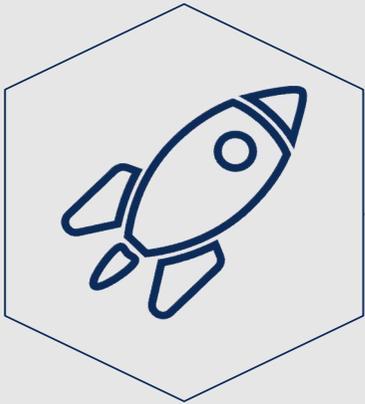


Innovate
with confidence

So you can focus your time on adding value for your business



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