STRATO MERCATA LIGHTPAPER

STRATO mercata

The Public Blockchain for Business

blockapps

Unlocking business value by bringing the world on-chain

Businesses Data
Businesses need to keep their proprietary data private

Interoperability
Private blockchains must be easily interoperable

Fraud Resistance
The expected cost of committing fraud must be very high

Blockchain is a transformative technology in many applications. It holds the promise to increase the efficiency of many common business transactions, bring transparency to supply chains, and enable cooperation in ways never before possible.

But the blockchain industry of today has a fundamental flaw: It is almost entirely powered by speculative gambling. The biggest players in the industry make most of their money by enabling this speculation via exchanges, lending, and stablecoins. This situation is not sustainable. The current model requires an exponentially increasing number of new investors or a large pool of customers willing to consistently lose money in order to continue to function.

STRATO Mercata aims to address this issue by introducing real-world assets to the blockchain. This will not only help fix issues at the heart of the blockchain economy, it will also bring the benefits of a decentralized, innovative blockchain ecosystem to the real economy.

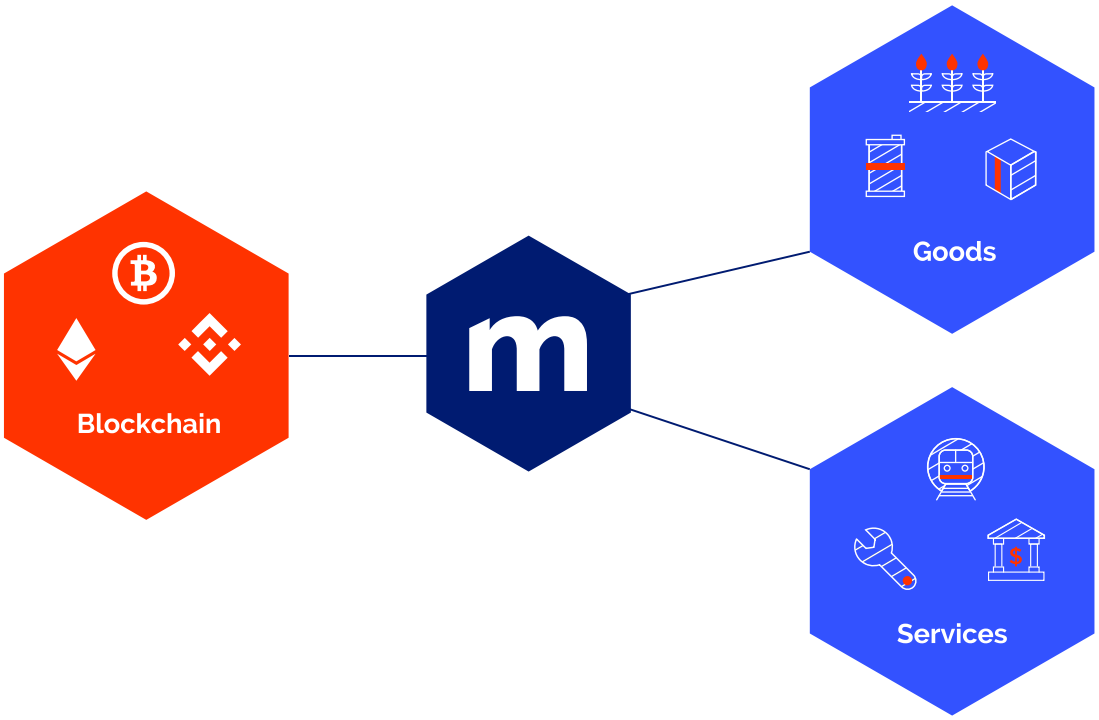


Table Of Contents

Overview

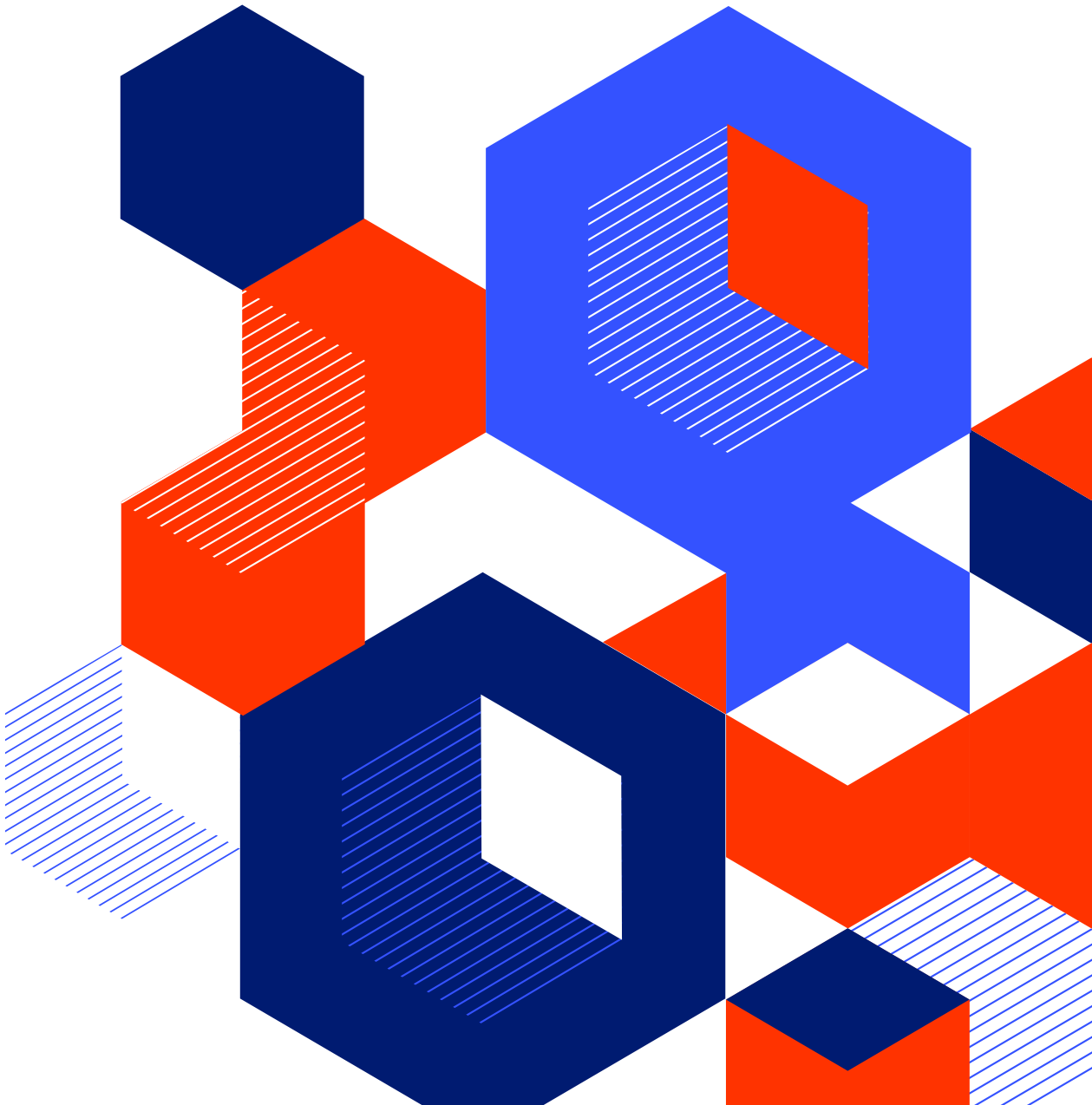
Challenges

Business Use Cases Of Blockchain

STRATO Mercata

Challenges

Examining problems with current blockchain solutions that limit business use



Problems with the current blockchain economy

Blockchains excel at tracking and facilitating conditional exchange of assets

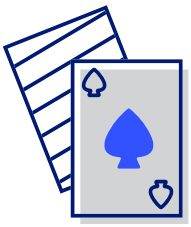
The popularity of crypto lending platforms like Voyager, BlockFi, Celsius, Babel and Vauld show that there is a strong demand within crypto for "safe" yield-bearing crypto investments. Unfortunately crypto is notoriously short on reliable assets.

The core issue is that most of the crypto economy is based on negative sum exchange of speculative assets. There are no earnings because no value is created. In most of crypto, the only way to make money is to take it from someone else. The illusion of positive-sum exchange is only possible with a constant inflow of new buyers driving up prices.

Most of the real economy consists of the exchange of goods and services. If crypto wants to play a large role in the future, it must facilitate the exchange of real-world value. To do this, a solution is needed that overcomes the shortcomings of both public and private blockchains.

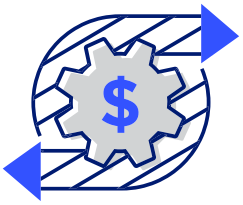
No earnings

Few tokens generate profits. Those that do rely on transaction fees generated mostly by speculators, who are often only interested in selling tokens on the exchange to another user for a higher price.



Most applications are for trading or gambling

With few exceptions, the applications that generate gas fees rely on people wanting to trade crypto or gamble. These applications can only take blockchain so far.



Most users only care about making money

Crypto generates returns by drawing in new users. But those new users are mostly interested in getting rich. This cycle is fundamentally unsustainable.

Public Blockchains

Public blockchains are useful in many contexts, but they have shortcomings for business applications

Benefits

Public blockchains are highly decentralized, making them more robust to node failures and network attacks.

They are also, as the name suggests, public. This openness means it is very easy for developers and entrepreneurs to create new decentralized applications that rely on public blockchains, which further increases their utility.

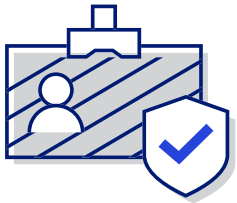
The lack of gatekeepers combined with the difficulty of falsifying on-chain transactions makes cooperation easy even if neither party trusts one another.

Drawbacks

Public blockchains have many drawbacks that make them poorly suited for business use.

Most are set up in such a way that anyone anonymously validate transactions by running a node. If a large bank wants to trade derivatives on a public blockchain, this presents problems; adversaries such as rival banks or even foreign countries could buy up a large stake in such systems and bring the entire banking system to a halt with a 51% attack.

The inherent open nature of transactions on the public blockchain is also a problem for business activity. As a rule, companies do not want their transactions disclosed to competitors. This was one of the chief motivations behind the creation of private blockchains.

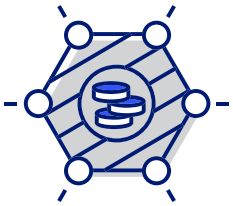


No verified identities

Most companies need to know who they are doing business with for both regulatory and practical reasons

Transactions are public

Companies want to keep most of their data private



Proprietary currency exposure

Being forced to pay fees with a speculative token is inconvenient and exposes a company's balance sheet to unpredictable risk

Private Blockchains

Private blockchains protect sensitive data, but reduce many of the benefits that make blockchains appealing

Benefits

Private blockchains have many of the benefits of blockchain without the issues of public transactions. As a rule, companies want to keep their transactions private. This is often a desire of their customers as well — most people don't want their purchase history to be public information.

Private blockchains allow information about transactions and smart contract outcomes to only be shared with parties approved by participants.

It can also sometimes be beneficial to have more control over who can run a node on the network. Network security can be very expensive for public blockchains, mostly due to the need to ensure anyone can validate transactions but no one can falsify them. By more directly controlling who can validate transactions, private blockchains can cut down on network security costs.

Drawbacks

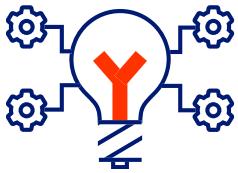
One of the greatest benefits of blockchain over a normal database gated by an API is that a public blockchain is permissionless. Anyone can use it to develop an application.

Private blockchains reduce the benefits of open, permissionless innovation by creating a new set of gatekeepers. Startups with a useful idea for a new product have to go through negotiations to develop for a private blockchain, and can be blocked from entry by existing members whose business they may undermine through innovation.

Lastly, setting up a private blockchain can be very difficult. Finding validators for the network is hard, incentivizing development and creating applications are especially challenging for closed-off private chains. However, despite these challenges, private blockchains have seen successful use in commercial applications, as we'll explore in the next section.

Incompatibility

Many private blockchains are not compatible with industry standards like ERC-20



Reduced innovation

The closed nature of private blockchains constrains growth and innovation

Less reliable

Private blockchains can have greater issues with reliability due to their small size

Business Use Cases

Explore the ways blockchain can add value to existing business operations

Why Real-World Assets Need Blockchain

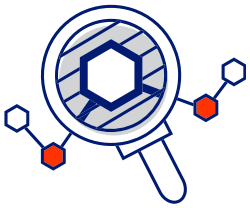
Blockchains excel at tracking and facilitating conditional exchange of assets

Despite issues with both public and private blockchains, both are already being used in business applications.

The modern world consists largely of entries in databases. A blockchain is, at its core, a database. Traditional databases, however, struggle when it comes to multi-stakeholder access. Database writes, traditionally controlled via API access, must be carefully managed by a trusted third party.

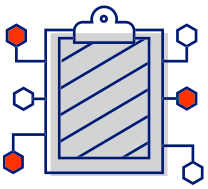
Blockchains are uniquely suited to solving coordination problems that arise in this type of setup. Any kind of business agreement that depends on on-chain data can be specified and executed by the blockchain itself. This is particularly advantageous when it comes to repeated transactions with a similar structure such as business contracts. Blockchain allows for greater cooperation among parties that may not fully trust one another. Instead of trusting each other, participants trust the code and the blockchain protocol.

In the following pages, we give examples of some of the ways blockchains are already being used in business.



Traceability

Automatic traceability and auditability of assets



Business agreements

Automatic transfer of funds and assets via smart contracts in accordance with business agreements

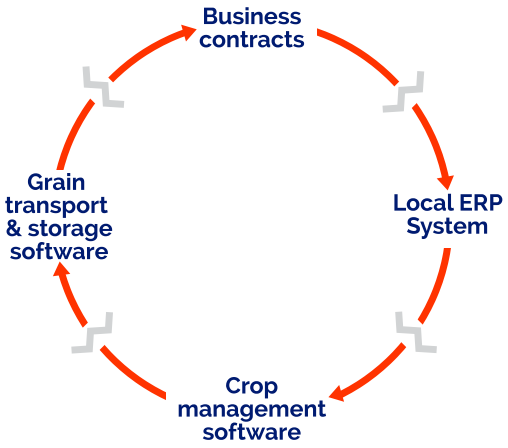
Reliability

Public blockchains resistant to outages due to their decentralized nature

Supply Chain Traceability

Blockchains excel at tracking and facilitating conditional exchange of assets in a supply chain

How It's Done Now



A typical agricultural supply chain: The data systems don't talk to one another.

How It Could Be Done

A supply chain integrated using blockchain: The systems can are interoperable via blockchain APIs.

The first way blockchain can facilitate the exchange of real-world value is through adding traceability to supply chains. In modern supply chains, each step in the production process often uses a different data system. These systems are rarely interoperable, meaning suppliers don't know where their products end up and distributors don't know where their products came from.

Integrating these systems using traditional database technology involves tradeoffs — it is challenging to make databases that are both accessible and secure.

As a result, data is usually passed between systems using manual data entry. This adds overhead and is an unpleasant task for employees.

Data systems within a supply chain can be integrated using APIs and secured with blockchain.

Using the private shard architecture of STRATO Mercata, proprietary company data can be selectively revealed only to the parties with which the company wishes to share access. The immutable nature of blockchain ensures that a full history of transactions will always be available.

This amount of full traceability unlocks greater value for everyone in the supply chain; products that are certified to be made in a certain way can often sell for a premium — the value of which can be captured by all parties with relevant data.

Carbon Credits & Offsets

Blockchain makes carbon markets more credible and scalable

Another clear business use case for blockchain is to facilitate carbon offset markets, a rapidly growing part of the global solution to climate change.

To meet stringent greenhouse gas (GHG) reduction plans and "net zero" commitments, countries and corporations are increasing investments in carbon reduction projects worldwide.

Ranging from tree-planting to solar installations to direct air capture, these projects sell carbon credits to buyers seeking to offset their emissions. Each credit represents the atmospheric removal or avoidance of a carbon ton (tCO2e).

Due to explosive demand for carbon credits, the global voluntary carbon market (VCM) is expected to grow 50X by 2030 and as much as 100X by 2050.

Unfortunately, there are significant flaws in the VCM that are impeding its ability to scale effectively. One challenge is supply – current projects are not producing enough carbon credits to meet the demand. In many cases, the process for bringing new offset methodologies to market is too time consuming and cumbersome.

Another problem is credit failure and fraud – according to multiple studies, anywhere between 35-85% of carbon credits fail in their promise to reduce a carbon ton. The global decarbonization imperative cannot succeed if the unit of account (tCO2e) is not credible. [1].

Rapid Innovation

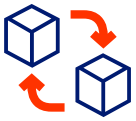
Enabling new offset technologies to enter the market rapidly

Transparency

Providing carbon credit data transparency and assurance for buyers

Better Incentives

Unbundling centralized market models to reduce conflicts of interest



Fewer Middlemen

Reducing the role of intermediaries that add little value

Steady Income

Ensuring ongoing project income in secondary markets

Better Platform

Delivering a more efficient, secure, and interoperable trading platform for buyers and sellers

Invoicing & Asset-Based Lending

Tracking collateral is easy when ownership is represented on the blockchain

How It's Done Now

Unverified letters of assignment

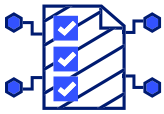
Manual loan adjudication

High-cost loans

Manual data entry

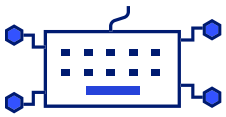
How It Could Be Done

Verified letters of assignment



Automatic loan adjudication

Less expensive loans



Automatic data entry

Receivables financing methods — invoice factoring & asset-based lending — can be streamlined with a blockchain-native solution. For context, companies leverage receivables financing programs to unlock working capital from outstanding invoices, which in this case are the real-world asset. The funders in this situation, particularly those that do not have the large scale of industry leaders, often rely on slow, unreliable technology to facilitate these loans.

Letters of assignment, for example, are often sent via email in a way that can be spoofed by bad actors. When scammers make off with invoice payments, it leads to losses for both lenders and borrowers.

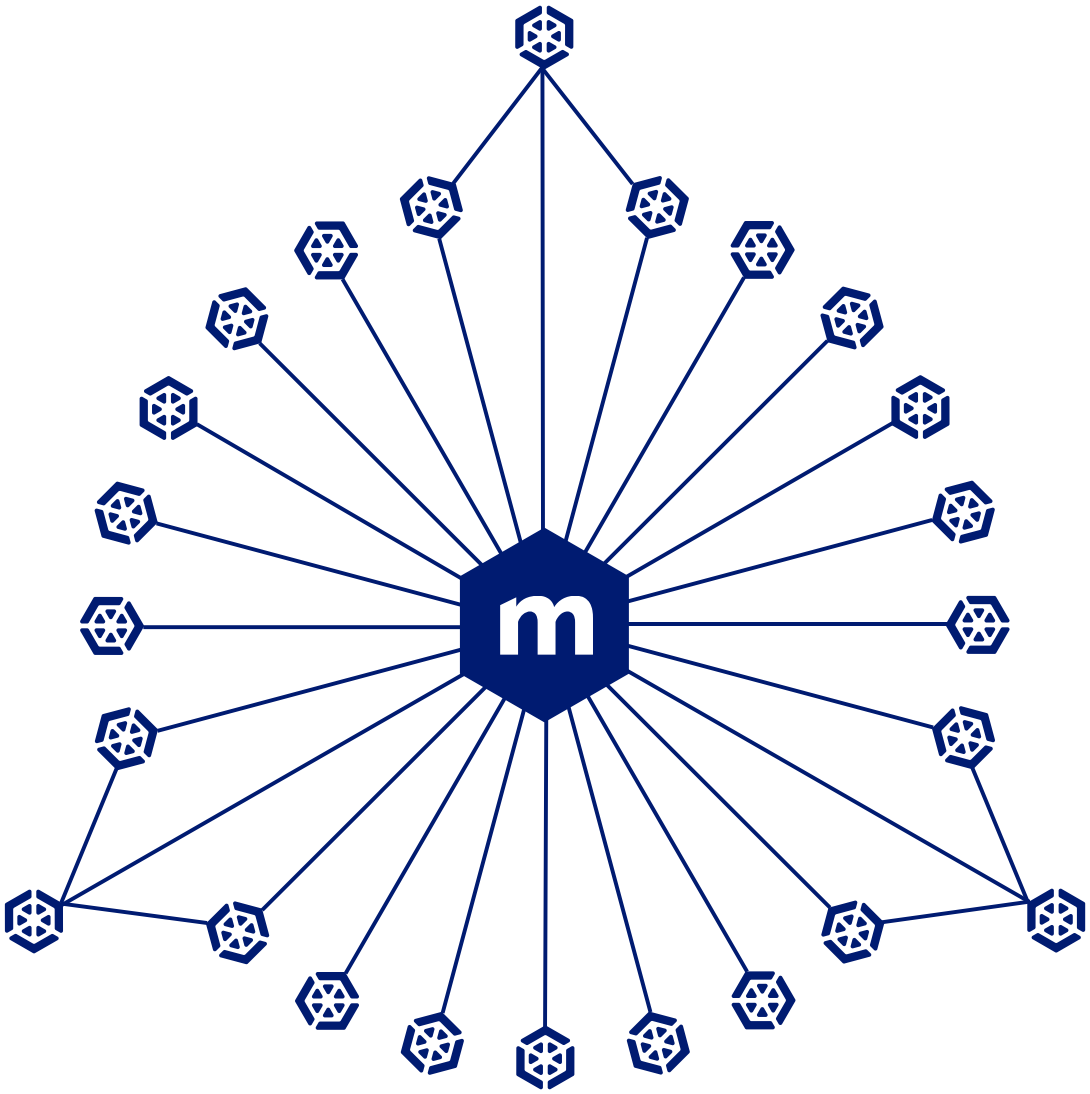
Another issue is the high cost of onboarding new customers, which requires extensive paperwork and adjudication. These slow, time-consuming processes increase customer acquisition costs for the entity providing the financing.

On STRATO Mercata, financial contracts and applications can be converted into smart contracts, thus expediting manual adjudication processes.

Additionally, STRATO Mercata's unique privacy shard structure allows organizations to selectively share relevant data with business partners or lenders in a secure manner.

KYC and AML are conducted on all entities as a prerequisite to using the system, further preventing fraud through theft of loan repayment. Universal Commercial Code searches will be conducted by operators of the network, along with accompanying filings with secretaries of state in the relevant jurisdictions.

Ultimately, these features create an environment where users can seamlessly transact on a secure peer-to-peer network.



STRATO

mercata

What is STRATO Mercata?

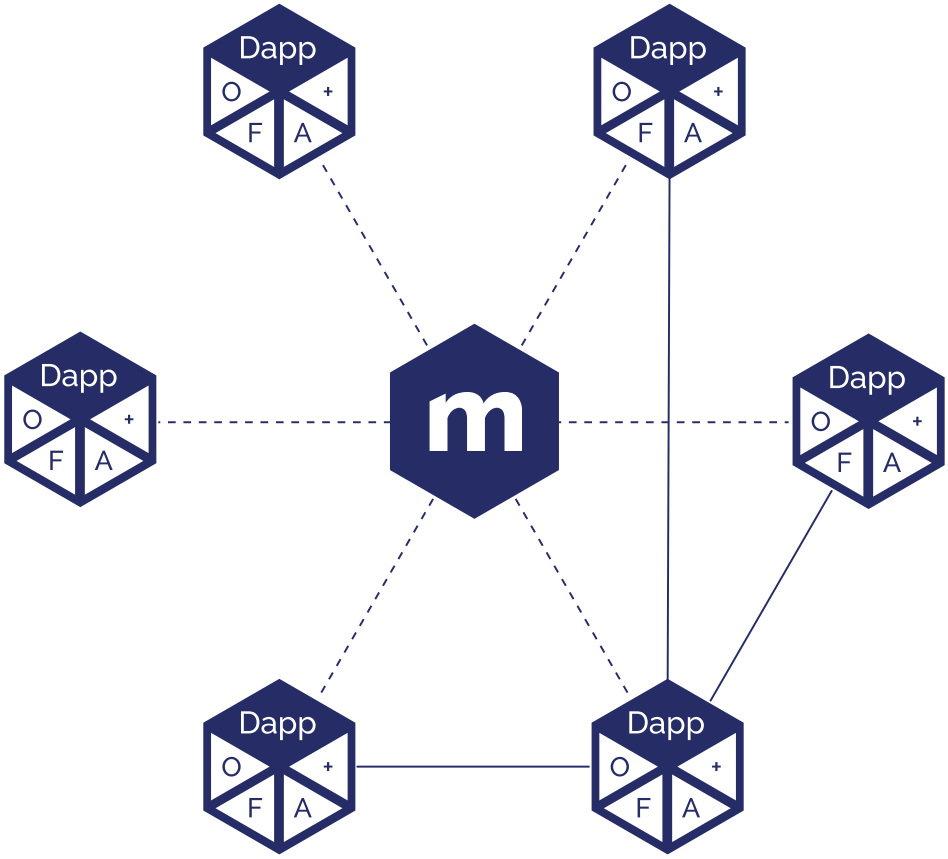
STRATO Mercata is a network of interoperable private blockchains connected to a public main net

STRATO Mercata combines the best features of private blockchain with the rich feature set and network effects of a public blockchain. It is the technological backbone for a blockchain-based marketplace of real-world assets. It maintains many of the benefits of both public and private blockchains listed in the “Challenges” section, while introducing new features to address the drawbacks of each.

STRATO Mercata allows for selective privacy by storing sensitive company data in privacy shards. The state of those shards is hashed and written to the public main net, ensuring consistency between copies as well as auditability.

Privacy shards are grouped together into dapp realms. Each dapp realm has several default shards such as an organization shard, a factoring shard and and asset shard. They also have the option to add additional custom privacy shards. It’s possible for smart contracts in one dapp realm to access data from shards in another dapp, as illustrated in the diagram below.

To allow for easy code audits, smart contract source code is stored directly on the chain and interpreted by the SolidVM interpreter at runtime.



Governance

STRATO Mercata will be administered by holders of its governance tokens

Membership in the STRATO Mercata governance organization will be granted by governance tokens, a digital security that will grant its owners voting rights and a portion of potential future cash flows. Funds raised through the sale of these governance tokens will be allocated to development and growth of the STRATO Mercata network.

Governed

Participants buy equity in the organization and receive governance tokens.

Voting

Token holders have voting rights in the network DAO, which includes appointing network validators.

Profit Sharing

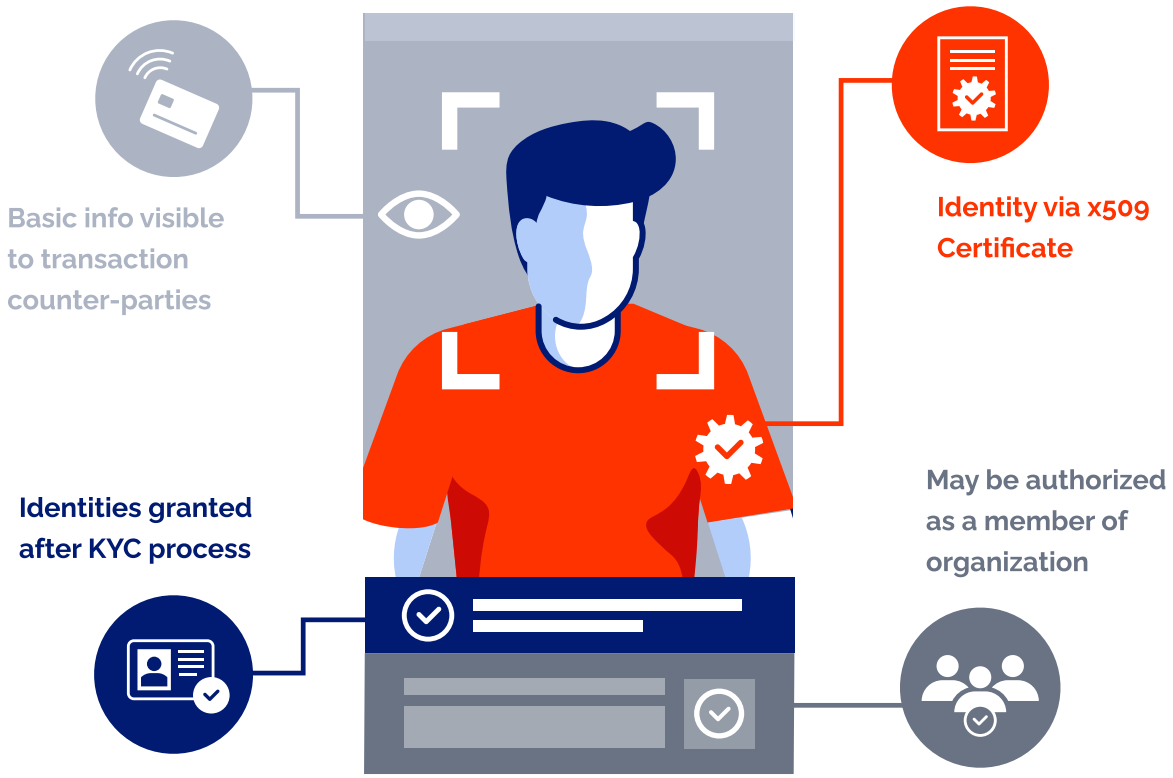
Token holders receive a share of network profits, with validators receiving a higher percentage.

Identity

Crypto has become a growing hotbed for fraud and money laundering due to anonymity. Identity can help.

Knowing who you do business with is an integral part of almost all businesses today. Companies and individuals who wish to write data to STRATO Mercata must go through an identity verification process. Once complete, they will receive an x509 identity certificate, which forms the basis of each user's identity on the network.

Associating a real identity with network users will significantly raise the cost of committing fraud, a persistent headache for legitimate commerce on other blockchains. By default, these identities and associated metadata will be visible to all parties that participate in a transaction with a given platform identity.



Payments

Payments on STRATO Mercata can be made through a variety of currencies

STRATO Mercata will support payment in multiple currencies via fiat-denominated stablecoins issued by partnering institutions. The network will collect a small transaction fee to fund its operations and provide a return for investors in the project.

Mercata will also offer support for chargebacks, a popular feature of fiat payment systems that allow buyers to dispute transactions in the case of broken or missing merchandise, fraud, or a number of other legitimate grievances.

Adjudication of chargeback disputes will be handled by entities authorized by the Mercata governance organization, who will be tasked with reviewing evidence submitted by each party and issuing a ruling. Both buyer and seller must mutually agree on a particular entity before it will be tasked with resolving the dispute. The liable party must pay for the charges, along with fees charged by the organization responsible for adjudication.

Digitally Signed

All transactions are digitally signed, making them legally binding according to US law.

Financially Backed

On STRATO Mercata, payments can be made via fiat-backed stablecoins.

Network Fees

There's a small transaction fee that will be public and set by the governing body. Stablecoin providers may set their own fees.

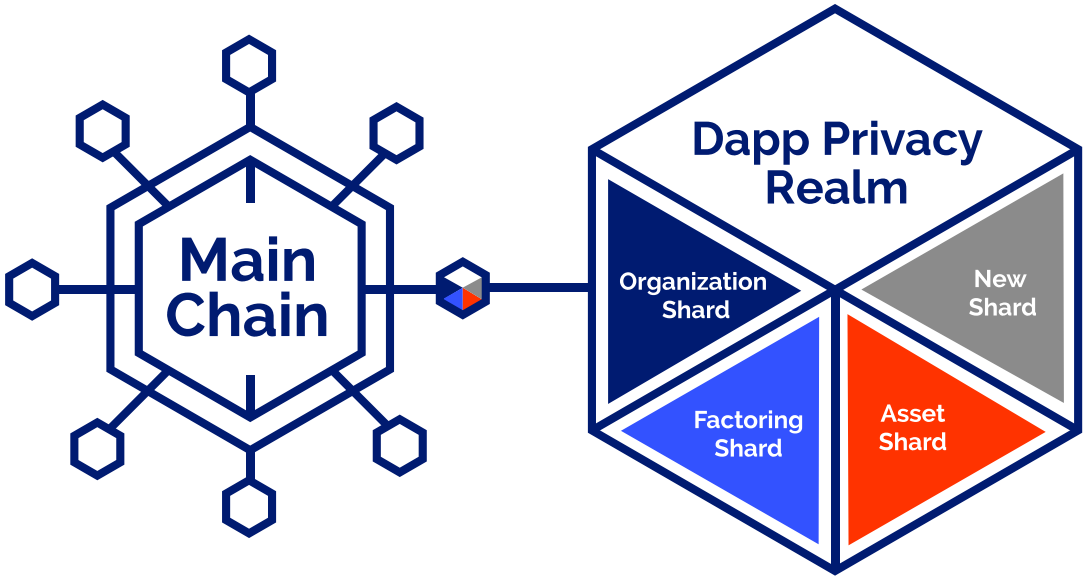
Privacy

Sensitive data can be kept secure through the use of configurable privacy shards

Data privacy is another core focus of the platform. STRATO Mercata will allow companies to store confidential company data securely on the blockchain through the use of privacy shards.

Privacy shards are a low-overhead method for restricting data access to a subset of STRATO Mercata users. There are several different implementations of privacy shards in STRATO Mercata. These shards are grouped together into dapp privacy realms and include organizational shards, factoring shards, and asset shards. Data in each shard is visible only to dapp users that have read permissions or are in contact regarding invoice factoring.

Privacy shards connect their own private transactions to the main chain by putting a secure hash of a transaction into a block's transaction data. This allows a record of the transactions and data to be recorded on the main chain without exposing information to non-members. A user that does not have access to a privacy shard will only see the hashed data of the private chain, but the data will have no other indication of what transactions occurred on the private chain, or any other information about the chain such as its members or chain ID.



Other Considerations

Performance & Interoperability

STRATO Mercata supports cross-chain compatibility via industry standard protocols like ERC-20 for smart contracts and ERC-721 for NFTs. The main chain currently supports about 2 transactions per second, though we will be able to expand that significantly over time.

Consensus Mechanism & Carbon Footprint

STRATO Mercata uses a Practical Byzantine Fault Tolerance consensus mechanism, which consumes significantly less power than Proof of Work blockchains such as Bitcoin.

Pioneering Blockchain: The BlockApps Story

CO-FOUNDER & CEO

Kieren James-Lubin

CTO

Jim Hormuzdiar

CO-FOUNDER & CPO

Victor Wong

BlockApps was the first company incubated out of Consensys in 2015 and has created several industry innovations including the launch of the most powerful Blockchain as a Service (BaaS) platform on the market called STRATO.

BlockApps was also a founding member of the Enterprise Ethereum Alliance (the world's largest open standard blockchain organization). Kieren, Victor and Jim also worked on Ethereum prior to its launch in 2015.

Since then BlockApps has launched TraceHarvest in partnership with Bayer Crop Sciences in 2020, the first blockchain solution of its kind to track and trace the full lifecycle of agricultural products, starting at the seed source. In September of 2021, we launched TraceCarbon, a blockchain enterprise application that enables compliance and transparency for the CO2e ecosystem.

In September of 2022, we launched STRATO Mercata, a public blockchain for business, with the goal of bringing the benefits of blockchain to real-world assets.

Company Founded - 2015

Ethereum Launch - 2015

STRATO Launch - 2017

TraceHarvest Launch - 2020

TraceCarbon Launch - 2021

STRATO Mercata Launch - 2022

blockapps

Next Steps

Register for a STRATO Mercata account

https://login.blockapps.net

Start developing on STRATO Mercata

https://docs.blockapps.net

Visit BlockApps' Website

https://blockapps.net

Follow BlockApps on Twitter for Updates

https://twitter.com/blockapps

Follow BlockApps on LinkedIn

https://www.linkedin.com/company/blockapps