





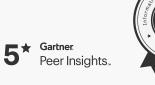
Why mainstream blockchain needs data privacy

Adi Ben-Ari

November, 2025







Team



Adi Ben-Ari Founder & CEO

Adi founded Applied Blockchain in 2015 after 20+ years as an enterprise architect and technology lead with Lloyds Banking Group, Lloyd's of London, Vodafone, the UK Ministry of Defence, IBM, Amdocs, and Logica.













Andrew Campbell Head of Product

Andrew is a solution architect with 10+ years of blockchain and cryptography experience. Previously, Andrew worked with a range of London startups and has over a decade of development experience.







We did the first product derivative trade on blockchain together with our partner Applied Blockchain."



Ben van Beurden Former CEO, Shell



Since

2015

Projects delivered

150+

Daily transaction volume

\$Billions

Some of our clients:













































Customers

ENERGY, TRADING, TRANSPORT AND SUPPLY CHAINS



















NFT MARKETPLACES





H E N I

aorist

uppfirst



cult

FINTECH















STRATEGIC PARTNERS



















WEB3























nuggets

TELECOMS





silent**data**

Opportunity

Critical mass of payments and assets will move on chain in next **5-10** years

US Genius Act • EU MiCA • UK Sandbox \rightarrow Regulated institutions can now use public chains

Circle IPO • Stripe £1B Bridge acquisition • Tier 1 FI's (Citi, JPM) mobilising



We're at the beginning of the tokenization of all assets

- Larry Fink, BlackRock CEO

5-10 years	\$17.6T	Long-Term Source: WEF	\$867T
Real World Asset (RWA) Source: BCG	\$16T	Equity Markets	\$95T
Stablecoins & Payments Source: Citi	\$1.6T	Debt Markets	\$106T
		Securitized Products	\$10T
ustries, from finance to		Derivatives	\$560T
privacy		Securities Financing	\$7T

Asset Management

\$89T

"

If blockchain is to scale into mainstream indu healthcare to identity, its future depends on p

Forbes

Example

Fundementals

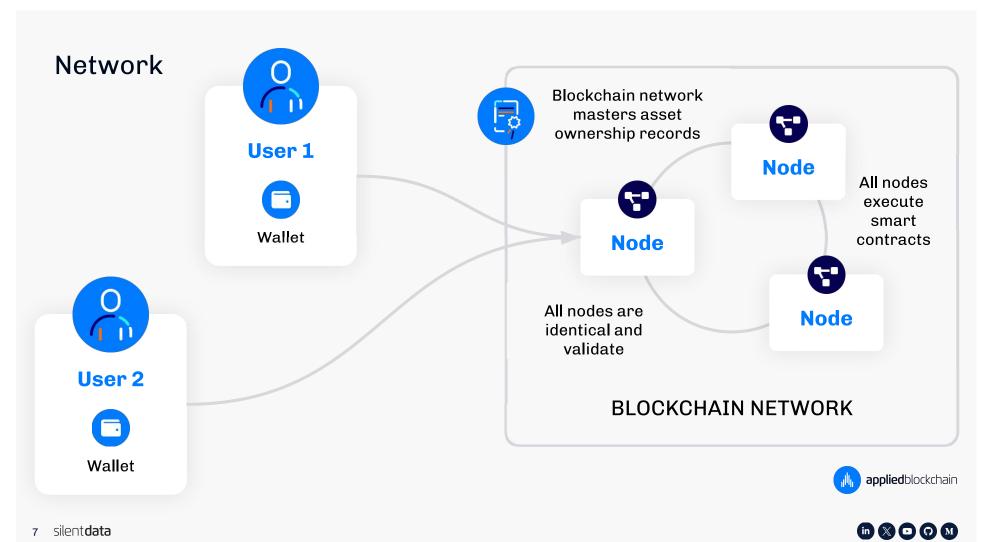


Group security





Asset ownership & transaction history



Opportunity

The reason most payments and assets will move on chain:

blockchain provides transformative technical efficiencies for managing and transferring value.

Private blockchains (Canton, Corda, Besu) and cross-chain bridges break up the ledger and undermine these efficiencies



Efficiency increases with application complexity

Payments → escrow → swaps → DeFi, perform more complexity with less steps / moving parts / actors



The greatest efficiency will be available to businesses

Largest volume and value of financial activity



Businesses require commercial privacy

Discrete customer & supplier discounts, discrete salaries, discrete real-time treasury, assets & loans balances, revealing these undermines commercial leverage



Ethereum standards are already de facto standards for blockchain, and L1 provides a secure backbone

(Eth RPC, EVM, Solidity + token standards = HTTP, HTML, Javascript)

Read the full article: Beyond Stablecoins →

Example

Escrow smart contract



Current Challenges with Payments

The global digital and services sectors face payment risk e.g. non-payment and non-completion of work. Buyers must trust work will be completed satisfactorily, sellors must trust payment will be received when the work is complete.



Key Challenges

- No Guarantee Payment will be Received from Buyer
- No Guarantee Work will be Completed by Seller





The Solution

Portafino removes the need for parties to trust one another, or to trust a third party to hold and distribute funds appropriately. Buyer funds are placed in an escrow smart contract upfront, and only paid out once the buyer is satisfied. Sellers have a guarantee that funds are available and locked. Buyer cannot withdraw funds unilaterally.



Key Benefits

- Funds are locked in escrow upfront, visible to both parties
- Payments are automated per mutually pre-determined terms
- Payments terms only change per trusted dispute resolution
- Buyers and Sellers are KYC-Verified (reduce risk of fraud)



Key Features





Biometric authentication enables easy and secure onboarding, offering users a familiar way to access the service - without needing to engage with the underlying complexity of blockchain, wallets, or keys.

Simple Access to **Digital Currency**



Fiat and stablecoin conversion via an integrated stablecoin infrastructure provider, allowing local and international payments. Buyers and sellers retain self-custody of their stablecoin balances and receive support even if not familiar with digital assets.

Milestone-Based Payments



Payments held in escrow can follow predefined milestones, with updates allowed as needed, ensuring funds are released gradually, in line with verified project progress.

Dispute Resolution



Where needed, disputes can be resolved by mutual agreement between the parties or through a mediator, with all funds distributed solely between the buyer and seller.









Example Solution Flow: 1/2

Agreement & Milestones
Mutually Agreed







2 Buyer Funds the Escrow







Example Solution Flow: 2/2

Seller Submits the Deliverables
Based on Milestones







4 Buyer Approves the Work







Upon Approval, Smart
Contract Releases the Funds
to the Seller







Example Solution Flow: Dispute Resolution

Either Buyer or Seller Can Raise a Dispute







If No Agreement is Reached, a Mediator Resolves Dispute











Businesses need commercial privacy



Private networks



Privacy through isolation



First we had open, public networks



Then we closed and made them private among groups of companies



and isolated further
Each time reducing the
number of validators,
making the
blockchains less
secure



Private vs public

Private Blockchains	Public Blockchains
 ✓ It's private! X Every party needs a node X No one wants to host a node X Cost multiplies with participants X No shared ledger X There's no composability 	It's secureIt's transparentAll our data is public!

Can we validate identical nodes and have privacy?



Zero knowledge proofs (ZKP)

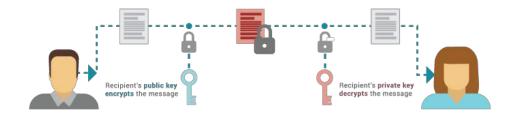


What is advanced cryptography?

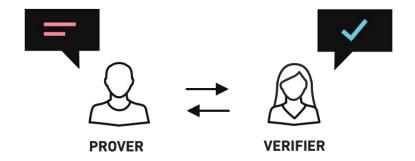
Advanced cryptography

PUBLIC KEY CRYPTOGRAPHY

Secret messages & digital signatures



Proofs and computations of data without the data





Companies are collecting as much personal and commercial data as they can from any sources, for analytics and AI, even if they don't know what to do with it right now.

Advances in cryptography will counter this by protecting data and enabling collaboration on data without necessarily having to share the data.









"The scale and rate at which data is collected, used and analysed is rapidly increasing, offering significant new and developing benefits to society and the economy. However, realising the full potential of large-scale data analysis may be constrained by important legal, reputational, political, business and competition concerns"

The Royal Society



Zero knowledge proofs

- It is trivial to prove that one possesses knowledge of certain information by simply revealing it;
- The challenge is to prove such possession without revealing the information itself



Actors



Peggy

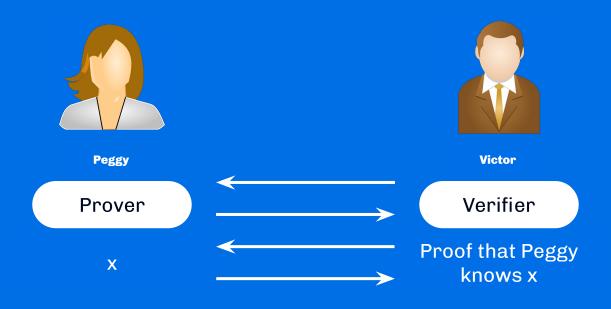
Prover



Victor

Verifier

Interactive zero knowledge proofs

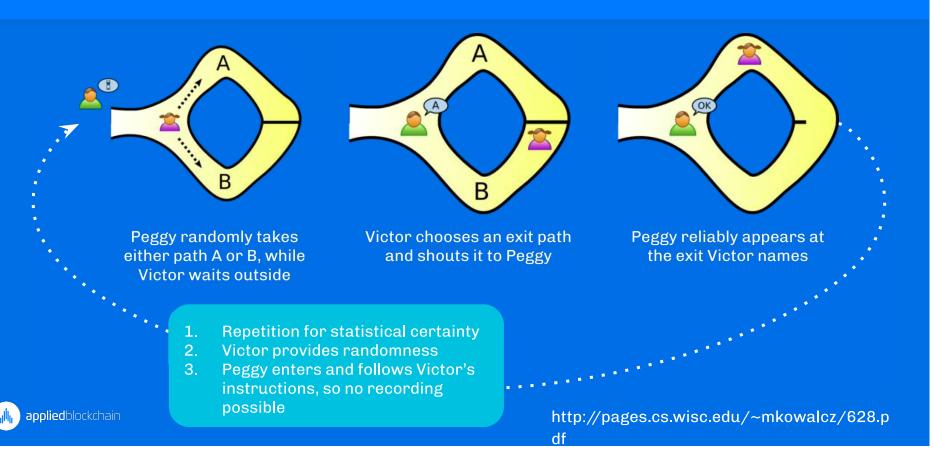




What are zero knowledge proofs?

Ali Baba Cave

Peggy knows the secret number code to open a door





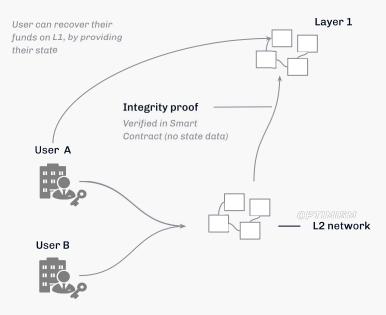
Absolute privacy It was very slow It was bespoke

- Zero knowledge proofs (ZKP)
- Secure multi-party computation
- Fully homomorphic encryption

Layer 2's



Layer 2's

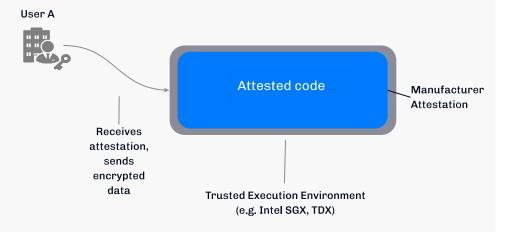




TEE-based privacy



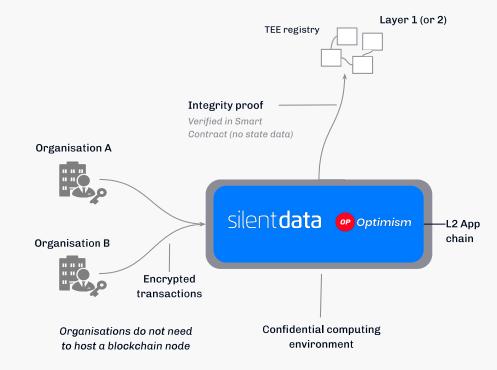
How TEE's work





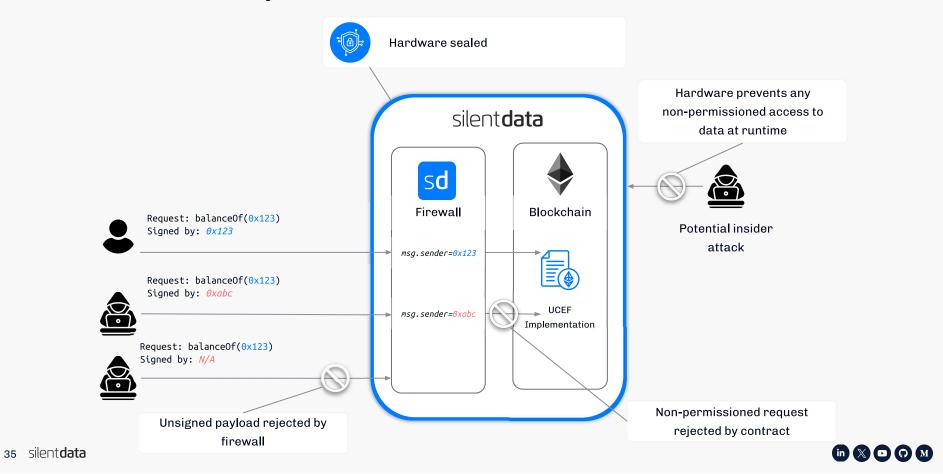
How Silent Data works

- ✓ Isolated, controlled environment ideal for regulated use cases
- ✓ No need for each organisation to host a node
- ✓ Privacy between organisations
- Silent Data cannot access user data thanks to confidential computing (hardware-based privacy)
- ✓ Supports rolling up to both public and private blockchain networks





Silent Data security model



Private balances

```
modifier onlyAccountOwner(address account) {
    if (msg.sender != account) {
        revert UCEFUnauthorizedBalanceAccess(msg.sender, account);
    }
    _;
}
```



Private balances & with regulator visibility

```
modifier onlyRegulator() {
    if (msg.sender != _regulator) {
        revert UCEFRegulatedUnauthorizedAccount(msg.sender);
    }
    _;
}
```



	silent data	L1 Circle Arc, Stripe Tempo, Avalanche	L2 ZKSync, Linea, Base	FHE Zama	ZKP Paladin, Nightfall, Aztec	MPC Partisia	Private Blockchains Canton, Corda, Besu
Full Programmable Privacy Any smart contract privacy requirement	✓	Only payment tx	×	×	Partial Solidity, not EVM	Partial Solidity, not EVM	✓
EVM Standard & Tooling	~	✓	~	Requires custom tooling	Requires custom tooling	Requires custom tooling	No for Corda, Besu, Canton
Privacy from Host	✓	Only payment tx	×	Validators see sharing data	~	~	×
Full Shared Ledger Efficiencies True custody, DvP, swaps, DeFi	✓	~	~	~	~	~	×
Performance Transactions per second (TPS)	1,000s	1,000s	10s	10s	100s	10s	10,000's
Decentralised Security Guarantees for Users	~	×	~	~	~	~	×
Enterprise Readiness NIST approved cryptography	~	~	✓	×	×	×	~
Permissionned Validators For compliance	~	~	~	Not on L1 Ethereum	Not on L1 Ethereum	Not on L1 Ethereum	~

Silent Data is the only solution that combines real blockchain efficiency, commercial privacy, compliance, performance, and Ethereum security.

Secure healthcare logistics

"We wanted a company that was as invested in this as CRYOPDP. Applied Blockchain [the company behind Silent Data] is a perfect fit"





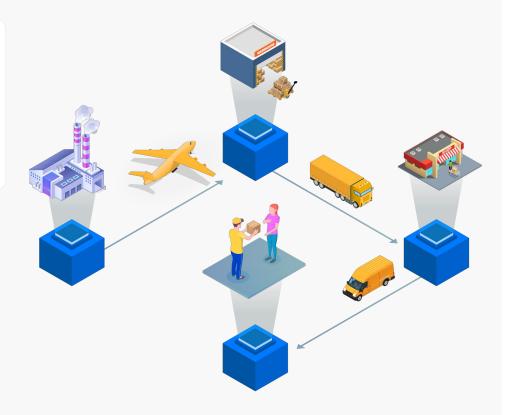
With a commitment to quality and compliance, CRYOPDP - a DHL Group company, ensures that critical life science and healthcare products are transported safely and efficiently worldwide.

600k+

15

Global operations

Deliveries per year Countries served





Privacy-first tokenization

"Nirvana is Silent Data – to get the reach and distribution of a public blockchain, but sensitive data is only viewable by the people you want to see it"





The first FCA-regulated global digital securities exchange, trusted by institutions for compliant digital asset issuance. **Archax** uses Silent Data to enhances their offering by preserving user privacy while maintaining full functionality.

170m+

Assets tokenized

100+

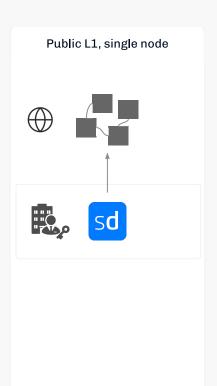
Asset classes

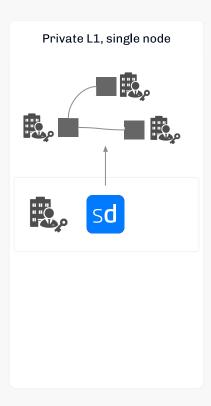
FCA

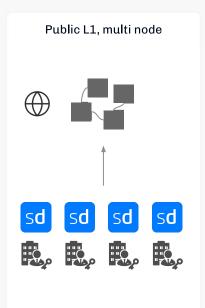
Regulated

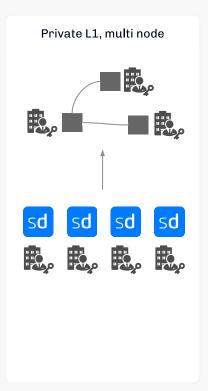


Configuration Options









Partnership intel.







Innovation

TEE for privacy

- Ethereum L2 technology for asset security and L1 recovery, TEE for privacy and fast confirmation time
- TEE blockchain provisioner \rightarrow verifiable privacy & transparency on-chain
- Resilient TEE mesh → systems can run continuously inside hardware-secure environments
- Beyond blockchain → TEE mesh extends to APIs, SaaS, AI, and more to improve cybersecurity
- Ability to incorporate open-source ZKP, FHE, MPC to harden privacy when ready.

Security Audited By





Component	Description			
Privacy L2	Privacy-Preserving Hardware Secure Enclave Environment for Generating Blockchain Verifiable Transactions at Scale			
Privacy Vault	Hardware Secure Enclave & Blockchain Based System & Method for Securing & Monetising Access to Data			
Privacy Monitor	Monitoring & Suspending Smart Contracts			
Privacy Oracle	System and Method for Providing a Verified Privacy-Preserving Attestation of Web Service Data Properties			
Giano (Passkey Smart Wa ll et)	(Open Source)			
London Bridge	(Open Source)			

04 Experience Industry: Energy



Shell

Scaling our derivatives trading platform from blockchain PoC to business critical system



Ben van Beurden Former CEO, Shell

"We did the first product derivative trade on blockchain together with our partner Applied Blockchain."

Read case study

Challenge

- Execute complex trades on increasingly volatile exchanges
- Manage security and efficiency protocols for its trading operations
- Align compliance procedures with multiple regulatory boards
- Integrate solution with legacy systems
- Introduce efficiencies to established trading organisations with existing ways of working

Solution

- Development of Shell Downstream Exchange (DSX)
- Real-time pricing, internal matching engine with CTT and RFQ flows
- Enhanced UI/UX with charting & newsfeed
- Secure access systems (SSO)
- Shell Legacy integration (live ETRM entry)
- Self serve admin enabling traders to request limits within MoA parameters

PRESS RELEASE

First energy product derivative trade on blockchain





APPLIED BLOCKCHAIN PODCAST #21

Watch podcast











04 Experience Industry: **Energy**



Challenge

- Improve managing the global supply chain for lubricant oil, ensuring compliance and maintaining product integrity across various jurisdictions
- Existing processes error-prone, inefficient, and vulnerable
- No disruption of ongoing business processes allowed

- Efficient management of records and certificates from hundreds of suppliers
- Product integrity and compliance improvements
- Effective communication between new and legacy systems
- Monitor and prevent counterfeit products
- Positioning Shell as a leader in adopting advanced technology to address traditional industry challenges





04 Experience Industry: Supply Chain



Company overview

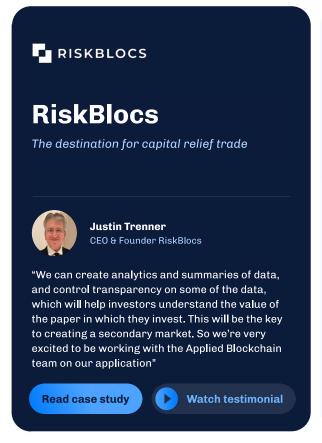
CRYOPDP, part of DHL Health Logistics, is a global leader in temperature-controlled logistics, specialising in the life sciences and healthcare sectors. They ensure the safe and efficient transport of temperature-sensitive, time-critical, and high-value shipments such as pharmaceuticals, biological samples, and medical devices. Key services include:

- Controlled Transport: Maintaining integrity across various temperature ranges.
- Clinical Trial Logistics: End-to-end support for clinical trials.
- Cell and Gene Therapy Logistics: Precision handling of advanced therapies.
- Packing Solutions: Passive, active, and dry vapor shippers tailored to needs.
- Customs Clearance: Smooth international shipments with regulatory compliance.
- Real-Time Tracking and Monitoring: Advanced visibility for every shipment.

With operations in over 135 countries, CRYOPDP ensures quality, compliance, and reliability to protect critical healthcare products worldwide.



04 Experience Industry: Finance



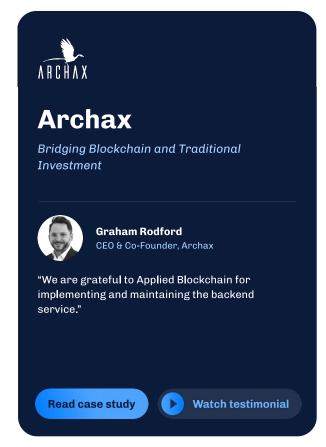
Company overview

- A regulated digital securities exchange in the UK
- Offers efficient token issuance and regulatory compliance, securely & efficiently
- Features automated KYC/AML for verified participant engagement
- Designed with a user-friendly interface for easy adoption
- Ensures operational reliability for the growing digital securities market





04 Experience Industry: Finance



Company overview

- A regulated digital securities exchange in the UK
- Offers efficient token issuance and regulatory compliance, securely & efficiently
- Features automated KYC/AML for verified participant engagement
- Designed with a user-friendly interface for easy adoption
- Ensures operational reliability for the growing digital securities market

APPLIED BLOCKCHAIN PODCAST

#06 - Graham Rodford from Archax: UK's First Regulated Token Exchange



















04 Experience Industry: Finance



Watr

The Environmental Data Platform Shaping Sustainable Trade

Read case study

Company overview

- Develops technology solutions to enhance transparency and accountability in supply chain management and environmental impact tracking
- Uses Blockchain, IoT, and AI to help businesses securely monitor, verify, and report on their ecological footprint
- Ensures ethical sourcing, compliance, and responsible practices
- Supports companies in meeting sustainability standards
- Fosters a more environmentally conscious approach to business operations

APPLIED BLOCKCHAIN PODCAST

#04 - Maryam Ayati from Watr: Tokenisation of Commodities









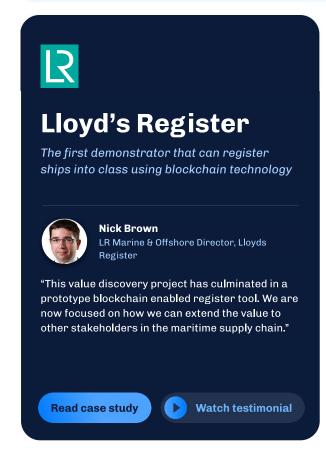








04 Experience Industry: Finance



Challenge

- Applying blockchain technology to the classification process of registering new ships into class
- Launching a prototype blockchain-enabled register tool

PRESS RELEASE

LR announces the launch of prototype blockchain-enabled Class register

Read



PRESS RELEASE

Lloyds Register prototypes blockchainenabled register

Read









04 Experience Industry: Finance

BAANX Baanx The Gateway Between TradFi and DeFi **Simon Jones** Chief Commercial Officer, Baanx "Working with Applied Blockchain has been invaluable in exploring innovative solutions, especially in areas where we've needed deeper understanding. The ability to collaborate and quickly get insights has been fantastic." Watch testimonial Read case study

Company overview

- Baanx bridges traditional finance (TradFi) and decentralised finance (DeFi) through API-driven platforms
- Offers crypto payment solutions, including payment cards for spending digital assets at millions of merchants
- Offers virtual IBANs, white-label apps, and more
- Integration of cryptocurrency services
- Ensures compliance and security, making crypto accessible for daily and business use











04 Experience Industry: Web3



Challenge

• Develop smart contracts for managing user registration, micropayments, and the platform's native utility token

Solution

- Developed EVM-compatible smart contracts on Optimism and ZKsync
- Enabled API credential management and micropayments
- Provided secure, blockchain-based AI access with crypto payments
- Supported ChainML's vision of an AI-powered, decentralised future



#16 - Ron Bodkin from ChainML: Transforming AI with Blockchain **applied**blockchain

Watch podcast







Adi Ben-Ari







04 Experience **Industry: Government**





Challenge

- Efficient and secure cash transfer distribution
- Review the Building Blocks platform architecture and code
- Streamline document management and approvals

\$325m+

Delivered in aid

\$555m+

Processed in cash transfers

Solution

- Developed EVM-compatible smart contracts on Optimism and ZKsync
- Supported creation of a blockchain system for refugee camps in Jordan
- Developed a multi-party system to streamline document management
- Supported over 1m people monthly across Bangladesh, Jordan, Lebanon, and Ukraine
- Delivered \$325m in aid, processed \$555m in cash transfers, and saved \$3.5M in bank fees (source: wfp.org)

PRESS RELEASE

Building Blocks - The World's Largest Humanitarian Use of Blockchain Technology





APPLIED BLOCKCHAIN PODCAST

#09

Watch podcast











04 Experience Industry: Aviation



SITA

Sharing flight data on the blockchain



Stephane CheikhFormer Ventures & Innovation Manager,

"Applied Blockchain have always been very helpful by coming up with new concepts and new developments. They challenge you as a customer, they say 'have you thought about this, have you thought about that?' This has been very refreshing and I would definitely recommend Applied Blockchain."

Read case study

Challenge

- Establish a 'single source of truth' for shared data
- Create a solution to enable secure sharing of flight data across their community

- Developed a solution enabling stakeholders to share data while maintaining privacy
- Created a platform-agnostic system compatible with Hyperledger Fabric and Ethereum
- Demonstrated scalability and suitability across multiple blockchain platforms





04 Experience **Industry: Aviation**



KLM

Provenance & Tracking on the Blockchain

Challenge

- Manage aircraft component data across stakeholders
- Create scalable blockchain solution



- Developed a proof of concept to store and share aircraft component data via **Smart Contracts**
- Utilised a private blockchain with nodes for each party
- Enabled all parties to register, verify, write, and read data with a permissioned view
- Conducted workshops to align technical and business requirements







04 Experience Industry: Web3

[LEDGER]

LEDGER

Integration of EIP-1559 for Ethereum mainnet



Victor Baconnet Product Owner, Ledger

"The Applied Blockchain team has been super kind and super helpful. It freed a lot of time actually on our side to just focus on quality and focus on the product side of things when you have a great team working on your feature."

Read case study

Challenge

- Support Ethereum EIP-1559 integration in the Ledger live app
- In turn, allow user to pay a high gas fee in order for their transaction to be prioritised (or a lower one, for lower priority and longer processing time)

- Designed and developed this integration in collaboration with the Ledger Live app product team
- Changes implemented in the transaction generation and signing logic
- EIP-1559 replaces the first-price auction as the main gas fee calculation and embeds an average price for Ethereum transactions







04 Experience Industry: Finance



KEO

All-digital inventory financing and payment solutions



Farid Shidfar Chief Innovation Officer & Co-Founder, KEO

"KEO, in collaboration with Applied Blockchain, has developed a scalable enterprise blockchain solution for B2B invoice payments and embedded credit solutions. Adi and his team have played a crucial role in the development of KEO Rails and have proven to be an exceptional team to collaborate with."

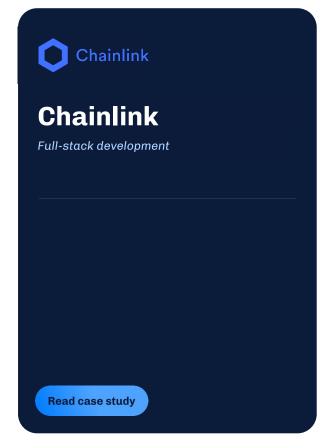
Read case study

Company overview

- KEO World is a fintech leader revolutionising B2B payments with digital solutions for inventory financing and secure transactions. By using blockchain technology, KEO enables real-time, multi-currency payments while fostering direct trust networks between businesses
- Its dynamic platform eliminates intermediaries, ensuring cost-effective transactions with enhanced security and transparency. Every interaction is recorded on an immutable blockchain ledger, safeguarding data integrity and preventing tampering
- With features like instant settlement, a user-friendly mobile wallet, and all-digital inventory financing, KEO World helps businesses optimise cash flow, streamline operations, and drive efficiency



04 Experience Industry: Web3



Challenge

- Enhance and maintain the Chainlink Hardhat Starter Kit
- Toolkit designed for building smart contracts integrated with Chainlink oracles
- Create, update, and maintain tools
- Enable quick deployment and testing with predefined tasks

Solution

- Simplified development of Chainlink-powered applications using on-chain Data Feeds, randomness, and API calls
- Enabled faster deployments with the improved Hardhat framework
- Allowed local testing and debugging of Solidity code without live environments
- Provided flexibility to extend the framework with custom plugins for specific projects

PRESS RELEASE

Applied Blockchain Receives Grant to Provide Key Chainlink Hardhat Starter Kit Updates









04 Experience Industry: Retail

cult

Cult Wines

Enhanced Inventory Management with Blockchain

Read case study

Challenge

- Upgrade inventory system for a P2P marketplace and decentralised warehouse
- Enable seamless wine provenance, ownership transfers, compliance, and taxation
- Integrate with existing inventory and CRM
- Use NFC technology

- Automated trading reports
- NFC technology for bottle traceability
- HMRC integration
- Oracle integration
- A web app for the operations team and a mobile app for warehouse management
- Provenance tokens to represent each bottle and crate, storing detailed information such as location, state, and anonymised owner details







04 Experience Industry: Music



Opulous

Copyright-backed NFT Marketplace for Musicians



Fernando Cruz Chief Marketing Officer, Opulous

"It's been great working with Applied Blockchain. They have a solid, smart team developing all the products we need at Opulous."

Read case study

Challenge

- Create NFT marketplace
- Help artists in monetising their work
- Foster a deeper connection between artists and their audience
- Adopt Music Fungible Tokens (MFTs), by Opulous
- Ensure transparency, security, and long-term value

- First copyright-backed NFT platform for musicians created
- Algorand protocol used
- Future phase developments:
 - Defi protocol for artist funding
 - Royalty profit sharing







04 Experience Industry: Art



HENI

"The Currency" NFT Collection for Damien Hirst

Read case study

Challenge

- Create an NFT art gallery
- Include a "Burn" feature
- Adopt secure and user-friendly smart contracts

PRESENTED BY **HENI** TALKS

Solution

- Enabled digital or physical art redemption until July 27, 2022
- Integrated IPFS for metadata and image access
- Simplified NFT retention and burning
- Implemented on the Palm Network with Ethereum bridging
- Introduced a "burn" feature to exchange NFTs for physical art

10,000

ERC721 tokens created and linked to artworks

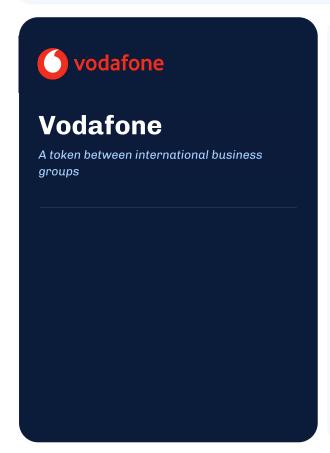








04 Experience Industry: **Telecom**



Challenge

- FX exchange between subsidiaries eating margins
- Improve settlement time

- Development of token which allowed subsidiaries to trade local currencies at a fixed exchange rate for a global token
- Protect business from FX fluctuations





silentdata



Do you want to know more about Silent Data?

Contact us Follow us Addresses

- silentdata.com
 in silentdata
 contact@silentdata.com

 @SilentDa
 - @SilentDataApp One Canada Square, Canary Wharf
 London E14 5AB, United Kingdom
 - **Development Center**Sala 2.01, Rua Augusto Rosa, n 79,
 Porto 4000-098



HQ Level 39

