Cardano Foundation

Traceability

Making supply chain claims publicly verifiable

Pairing Hyperledger Fabric with Cardano to keep enterprise-scale traceability both private and auditable

Challenge

Supply chains make compliance claims that few can verify

Companies operate supply chains that span many tiers, from anchor manufacturers to raw material producers, **which few brands have ever directly audited.** Regulations, including the EU Deforestation Regulation (EUDR), the Corporate Sustainability Reporting Directive (CSRD), and emerging Digital Product Passport (DPP) requirements, now require companies to prove **where materials came from and how they moved through the production process, rather than merely asserting it.**

Most traceability systems fall into one of two familiar traps. Private databases give a brand full control over its records but **leave auditors, regulators, and customers with nothing they can check independently.** Fully public ledgers solve that visibility gap but **expose commercially sensitive information, pricing, supplier contracts, and production volumes** to competitors and anyone else watching the chain.

Lower-tier suppliers compound the problem. Many operate without ERP systems or digital record-keeping, so their contribution to a product's history often arrives as invoices, PDFs, or WhatsApp messages that never make it into a structured, verifiable record. For brands facing binding compliance deadlines, **the result is a supply chain they can describe but cannot prove.**

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HYPERLEDGER FABRIC

Industry

- Digital Product Passport (DPP)

Size

- USD 185.9 Million (2024)[1]
- USD 1,780.5 Million (2030)
- CAGR 45.7% (2024-2030)

The challenge

- Multi-tier supply chains involve suppliers that a brand has never directly audited.
- Regulatory frameworks like EUDR and CSRD require documented proof, not self-reported claims.
- Public ledgers designed for transparency can expose sensitive commercial data.
- Lower-tier suppliers often lack the digital systems needed to produce structured records.

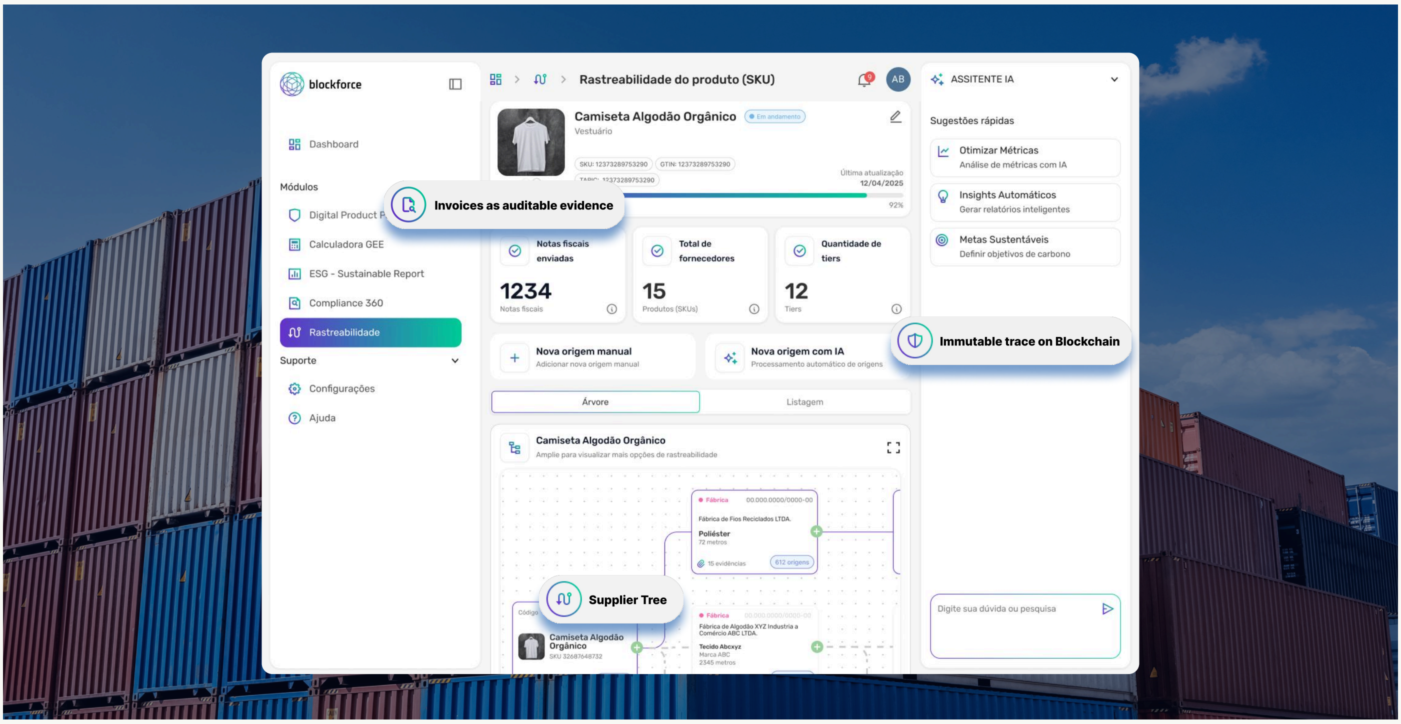
The solution

- Sensitive supply chain data remains on a permissioned Hyperledger Fabric network.
- Public proof of that data is anchored directly on Cardano.
- Batched anchoring makes on-chain verification viable at enterprise scale.
- Built-in compliance modules align records with GS1, EUDR, and CSRD requirements.

> "We needed a public infrastructure layer that could handle enterprise transaction volume without enterprise transaction costs. Working with Cardano gave us that: a way to batch dozens of certificates into a single anchor, immutable and independently verifiable, at a cost structure that actually works at scale."
>
> **André Salem**
> **Founder & CEO, Blockforce**

Solution

A dual-ledger architecture that secures private data and delivers verifiable proof



Blockforce built its supply chain platform on a dual-ledger model **designed to manage private and public permissions.** Commercially sensitive records, supplier identities, contract terms, and production volumes are captured and stored **on a permissioned Hyperledger Fabric network, visible only to the parties who need them.**

Verifiable proof of those records is then publicly anchored on Cardano. Rather than publishing full records on-chain, a batching process **condenses supply chain certificates into a single Cardano transaction,** with the batch size shaped by each use case. For Blockforce, **that means up to 44 certificates per transaction,** each still independently traceable back to its source, a batching architecture that makes anchoring commercially viable at enterprise scale.

Anchor companies connect through ERP integrations, while deeper-tier suppliers without digital infrastructure contribute through document uploads or a WhatsApp AI agent. On top of this, **GS1-aligned digital product passports, supplier risk scoring, and dedicated EUDR and CSRD compliance modules** give brands regulatory readiness built into the platform rather than a separate audit exercise.

Solution Walkthrough

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01. Supply chain data is captured through ERP integrations, document uploads, and a WhatsApp AI agent built for suppliers without digital systems.

02. Records are structured into digital product passports and stored on Blockforce's permissioned Hyperledger Fabric network.

03. The system packs up to 44 certificates into a single batch and anchors verifiable proof for each on Cardano.

04. Auditors, regulators, and brands can independently confirm the authenticity of any record on Cardano without accessing the underlying private data.

Results

Measurable progress toward provable supply chains

500,000 certificates anchored on Cardano
The initial production migration batched records into groups, condensing what would otherwise require hundreds of thousands of individual transactions.

Batching built for enterprise scale
Blockforce batches up to 44 certificates per transaction. This use-case-specific architecture makes anchoring commercially viable at enterprise scale.

Compliance built into the platform
GS1-aligned digital product passports and dedicated regulatory modules give brands a documented, audit-ready trail without a separate manual process.

Sensitive data stays confidential
Supplier identities, contract terms, and production details never leave Blockforce's permissioned network; only their cryptographic proofs reach the public chain.

Built to scale across industries
With roughly 6.5 million certification anchors contracted by 2030, the same infrastructure is being prepared for automotive, food and beverage, and cosmetics.

CARDANO Advantages

Proven resilience
Demonstrated security and reliability support continuous operation.

Scalable network
Future-ready infrastructure supports platform growth without sacrificing performance.

Secure data
Robust architecture protects sensitive data, minimizing the risk of breaches or fraud.

Sustainable operations
Energy-efficient consensus and ethical governance align with sustainability efforts.

Source
[1] Digital Product Passport (DPP) Market