

## Transparency from Farm to Fork: How GS1 2D Standards Powered SoLumi Fresh and DiLumi Fresh

Turning Every Carton into a Traceable, Verifiable Digital Asset and Every Product into Consumer Engagement Opportunities



Image of DiMuto's SoLumi Fresh Strawberries

Through DiMuto's private-label Singapore brands — SoLumi Fresh for premium fruits and DiLumi Fresh for reliable vegetables — DiMuto has developed a model that demonstrates how digitalisation, GS1 standards, and DiMutoClear can work together to build trust, reduce waste, and unlock new forms of value. Every product has a story – from seed to harvest, and from packing to delivery. Consumers can scan the QR code powered by GS1 to access detailed product information and learn more about the brand's story and origins.

DiMutoClear is a digital trade platform that gives every carton, document, and shipment a verifiable digital identity. By embedding GS1 2D barcodes into every carton and connecting them to DiMutoClear, exporters and buyers gain a single, immutable source of truth, making supply chains more transparent, resilient, and financeable.

### Challenge

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Opaque fresh produce supply chains create uncertainty, waste, compliance pressures, and weaken trust between exporters and buyers.

### Solution

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GS1 2D barcodes on every carton and product, linked to DiMutoClear, provide a real-time, verifiable digital record of each shipment from farm to retail.

### Benefits

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The system enhances trust, reduces disputes and waste, ensures compliance, strengthens brand value, and turns cartons into financeable digital assets.

Global demand for fresh produce continues to rise, but with that growth comes increasing pressure on supply chains. Buyers require stronger assurances of quality, origin, and safety, while exporters face stricter compliance obligations and increasingly complex logistics. For exporters in Mexico shipping mangoes, tomatoes, and peppers abroad, this challenge is particularly acute.

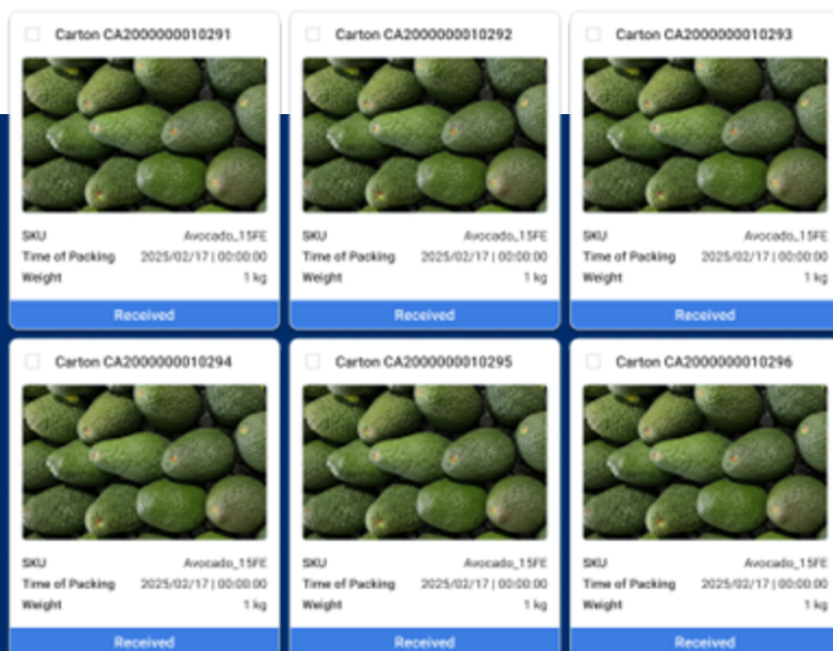
## **Challenge: Opaque Supply Chains, High Risk for Buyers and Exporters**

Fresh produce supply chains are notoriously difficult to manage. Once cartons leave the packhouse, exporters lose visibility of their condition, while buyers often receive shipments with limited information about origin or quality. This lack of transparency creates several recurring challenges:

1. **Uncertainty on arrival:** Buyers must take a leap of faith, and any discrepancy in quality or documentation can spark costly claims or even rejected loads.
2. **Food waste:** Unsold or disputed produce, much of which is perfectly edible, is discarded due to insufficient traceability or mismatched expectations.
3. **Regulatory compliance:** Rules such as FSMA 204 in the United States and similar frameworks globally now require more robust traceability, which many exporters struggle to meet.
4. **Weak trust in trade:** Repeated disputes strain relationships between exporters and buyers, undermining long-term partnerships.

## **Solution: Embedding GS1 Standards into Every Carton with DiMutoClear**

To address these challenges, DiMuto has applied GS1 standards directly into its private-label operations and connected them through DiMutoClear. Every carton of SoLumi Fresh mangoes or DiLumi Fresh tomatoes and peppers now carries a GS1 2D barcode, serving as the product's globally recognised digital identity.



SoLumi Fresh Avocados on the DiMutoClear platform

These barcodes encode essential information such as GTINs (Global Trade Item Numbers), batch or lot numbers, harvest dates, farm origin, and expiry details. Each scan links the carton to its digital record in DiMutoClear, where all trade, quality, and sustainability data is securely stored and made accessible.

This creates an interoperable system in which all stakeholders — from growers and packers to importers, retailers, and regulators — can access accurate, verifiable data at every stage of the product’s journey. By embedding GS1 standards at the heart of its trade operations, DiMuto ensures both compliance and global interoperability, positioning its brands for trust in markets worldwide.

Gary Loh, Founder of DiMuto, shared his perspective on adopting GS1 standards: “We chose GS1 standards for DiMuto because of their global recognition, alignment with industry best practices, and robust data structuring capabilities— all of which are critical for enabling end-to-end supply chain transparency and building consumer trust. As part of our implementation, we are leveraging GS1 2D barcodes, including QR codes powered by GS1, to enhance product traceability and unlock richer digital product experiences. We are pleased to partner with GS1 Singapore in our journey to help companies digitise their supply chains using GS1 standards.”

Christopher Ang, CEO of GS1 Singapore, commended DiMuto for its forward-looking approach to transforming the agri-trade industry through digitalisation. He highlighted that DiMuto’s adoption of GS1 standards, including GS1 2D barcodes such as QR codes powered by GS1, underscores its strong commitment to enhancing supply chain transparency, improving operational efficiency, and aligning with global best practices—reflecting a clear and progressive vision for the future of the industry.

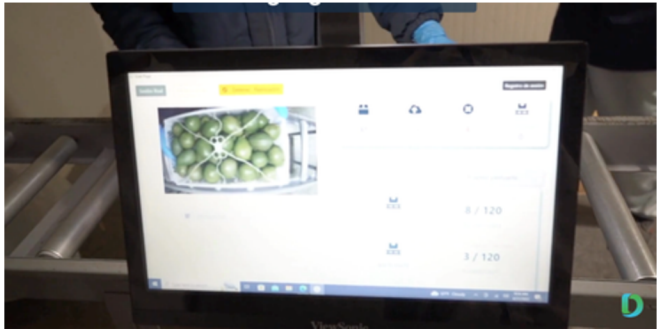
# How the Traceability Solution Works

The traceability model for SoLumi Fresh and DiLumi Fresh through DiMutoClear follows a structured process:



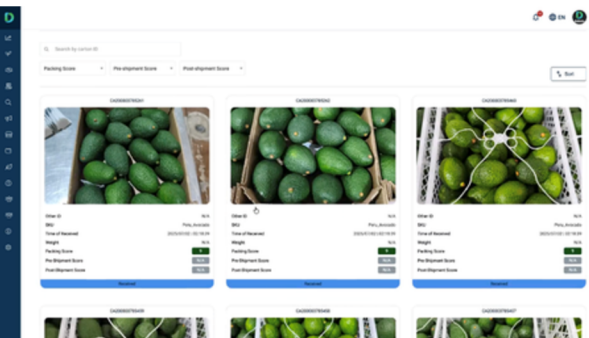
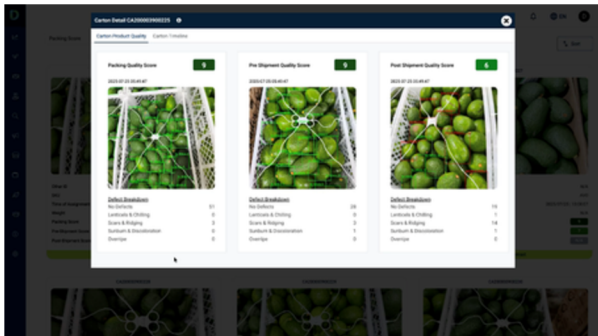
## 1. Tagging at Source

At the farm or packhouse, every carton is labelled with a GS1 2D barcode. This barcode carries the product's unique GTIN and batch information, establishing its digital identity from the outset.



## 2. Data Capture Throughout the Journey

At each key point — harvest, packing, shipping and customs clearance — additional data is logged. This includes harvest dates, PQAI (Product Quality AI) grading results, logistics milestones and certification records.



## 3. Integration

All information flows into DiMutoClear, which links product identities with trade documents such as invoices, certificates, and bills of lading, creating a unified digital record for each shipment.

## 4. Real-Time Access for Buyers and Retailers

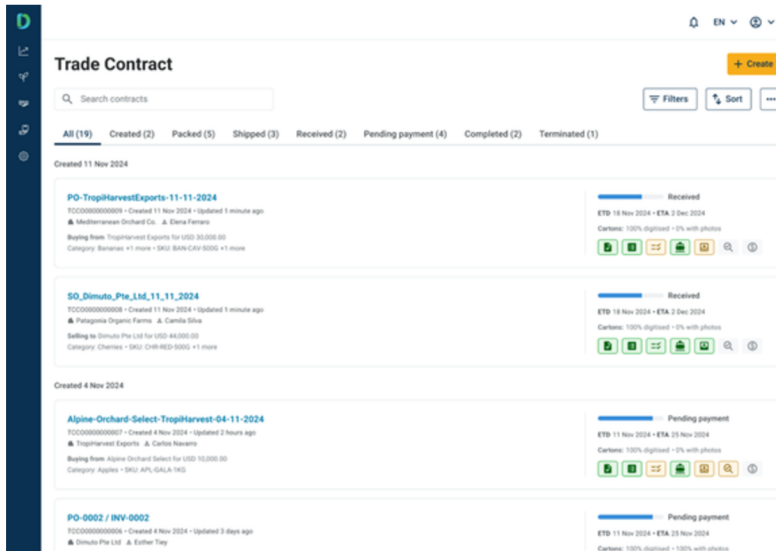
Importers, supermarkets, and food service providers can scan the barcode upon arrival to instantly view the full provenance as well as quality records. This eliminates ambiguity and supports faster clearance and distribution.

## 5. Circular Pathways for Off-Spec Produce

Produce that does not meet fresh market specifications can be redirected into frozen or processed supply chains with full traceability, ensuring nothing is wasted.



This system transforms each carton into a financeable digital asset, capable of supporting not only trade transactions but also risk assessment and financing decisions.



Tracking Trades with the DiMutoClear Platform

## Benefits: Trusted Trade and Tangible Impact

By integrating GS1 standards with DiMutoClear, DiMuto delivers clear and measurable benefits:

- **Trust and Transparency:** Buyers no longer rely on vague promises but on verifiable data that builds confidence and strengthens long-term relationships.
- **Reduced Claims and Faster Dispute Resolution:** With carton-level visibility and immutable records, disagreements can be resolved based on facts, not assumptions.
- **Lower Food Waste:** Instead of being discarded, off-spec produce is traceably diverted into other value chains.
- **Regulatory Compliance:** Adoption of GS1 standards ensures alignment with FSMA 204 and similar frameworks, opening doors to premium markets.
- **Brand Value Creation:** SoLumi Fresh and DiLumi Fresh stand out as transparent, sustainable, and reliable suppliers in a crowded marketplace.
- **Access to Capital:** Verified trade data feeds into DiMuto's AI-driven Trade Health Scores, unlocking affordable trade finance for exporters.

## A Foundation for Smarter, More Sustainable Trade

The story of SoLumi Fresh and DiLumi Fresh goes beyond compliance or efficiency. It demonstrates how private labels can serve a dual purpose: protecting margins while feeding real trade volume into a digital platform. Each shipment not only delivers fruit or vegetables but also contributes data that strengthens DiMuto's AI models, expands financing opportunities, and builds resilience across the entire supply chain.

This approach does more than mitigate risk. It creates new asset classes from data: first digital records, then Trade Health Scores, and ultimately financeable trades. By embedding GS1 standards at carton level and linking them through DiMutoClear, SoLumi Fresh and DiLumi Fresh serve as proof points for how digital transformation can rewire the global food system, reducing waste, enhancing sustainability, and ensuring that every fresh produce item can be trusted from farm to fork.

## About DiMuto

DiMuto is a global AgriFood Trade Solutions company that enables transparent, efficient, and data-driven agri-food trade. Through its integrated platform, DiMuto powers three core pillars—Marketplace, Trade Management, and Trade Financing—providing end-to-end visibility across the supply chain.

Leveraging advanced technologies such as blockchain, IoT, and AI, DiMuto digitises and verifies every stage of the trade process, creating a trusted ecosystem built on tracking, tracing, transparency, and trust.

Operating across multiple global markets, DiMuto connects suppliers and buyers, enhances operational efficiency, reduces risk, and enables sustainable growth in global agri-food trade.

## About SoLumi Fresh

SoLumi Fresh is a premium fresh produce brand powered by DiMuto's digital traceability platform, offering responsibly sourced fruits with full farm-to-fork transparency. Each product is digitally tagged and tracked throughout the supply chain, enabling real-time visibility into origin, quality, and handling.

Through QR-enabled product passports, SoLumi Fresh empowers businesses and consumers with trusted data, reinforcing confidence in product authenticity, freshness, and sustainability.

## About DiLumi Fresh

DiLumi Fresh is a private label brand by DiMuto focused on delivering high-quality, traceable fresh produce. The brand emphasises transparency, sustainability, and trust by digitally tracking products from farm to table.

Powered by DiMuto's technology, every product is supported by end-to-end visibility across the supply chain, ensuring quality assurance and responsible sourcing. DiLumi Fresh aims to reimagine how fresh produce is grown, sourced, and consumed—building a more transparent and sustainable food ecosystem.

## About GS1 Singapore

GS1 Singapore is the local member organisation of GS1, a global not-for-profit organisation that develops and maintains international standards for business communication. GS1 standards—including barcodes and data-sharing frameworks—enable organisations to uniquely identify, capture, and share information across supply chains.

In Singapore, GS1 supports businesses across industries such as retail, healthcare, and logistics in adopting global standards to improve efficiency, traceability, and interoperability. Through initiatives such as 2D barcodes and digitalisation programmes, GS1 Singapore helps companies enhance supply chain visibility, meet regulatory requirements, and drive innovation in both physical and digital commerce.

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