



The Global Language of Business

GS1 case study

One fruit, two countries, full traceability: How GS1 standards help track every durian

Durian exports from Thailand to China continue to rise. A cross-border pilot for this high-demand fruit shows how GS1 standards can strengthen trust, prevent fraud, enable safe food and facilitate digitally verifiable trade.



Challenge

In China, demand for fresh durians is rising fast. This has created new pressure on supply chains to prove that each piece of fruit is safe, authentic and certified. Exporters must now meet strict import rules while managing more risk and complexity across borders.

Solution

A pilot project connected traceability systems in Thailand and China using GS1 standards. GTINs, EPCIS and QR Codes powered by GS1 helped all parties record and share key data, and gave exporters, importers and regulators full visibility into each step of the product journey.

Benefits

The system helped strengthen product authenticity, supported food safety and built trust with consumers and regulators. It also showed how global standards make it easier to track products, verify origin and enable safer, more efficient cross-border trade in fresh food.

A fast-growing trade in fresh durians has created new pressure on supply chain systems to ensure product authenticity, safety and compliance.

Regional cooperation for food safety and cross-border trade

Durian is a tropical fruit prized in Asia for its rich flavour and unique smell. Exports of durian from Thailand to China are booming, and ensuring the authenticity of Thailand-grown durians and maintaining quality at every step of the journey is becoming more complex. To address this challenge, a pilot project was deployed to see if GS1 standards could make cross-border traceability work in practice: The Asian Development Bank (ADB) implemented a traceability programme for durians exported from Thailand to China from January 2023 to December 2024.

The pilot aimed to reduce supply chain vulnerabilities and meet evolving cross-border trade regulations by demonstrating how GS1 standards can improve product authentication, enhance risk management and enable scalable digital solutions that benefit all actors across the value chain, including small-scale producers.

Collaborative implementation

GS1 China worked in close partnership with GS1 Thailand, Thailand's National Science and Technology Development Agency (NSTDA), the Ministry of Agriculture and Rural Affairs (MARA) of the People's Republic of China, Thai durian producers and exporters, Chinese importers, customs officials and other stakeholders.

Working collaboratively, the traceability systems between the two countries were connected using GS1 standards and an EPCIS interface.

The results were clear: By using globally recognised GS1 standards to link data between Thailand and China, the traceability pilot improved transparency and trust - making it easier to verify the durians' origin and journey, and helping to prevent counterfeits or poor-quality products.



How the traceability solution works

Each Thai durian exported to China was labelled with a QR Code powered by GS1, which included a GS1 Global Trade Item Number® (GTIN®), a unique serial number using the GS1 Digital Link standard. A label with the QR Code was attached directly to each durian's stem, and another was affixed to the external box containing multiple durians.

As durians were picked, packed and weighed, key pieces of information—such as the origin, grower, packaging company, picking time, packaging time and certification details — were recorded and could be accessed via a QR Code powered by GS1.

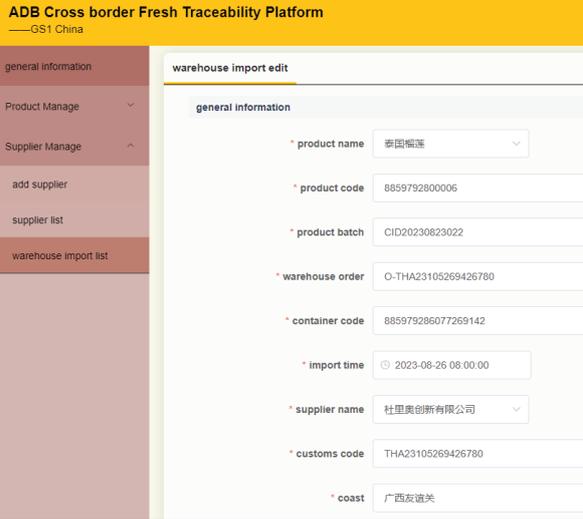
QR Codes powered by GS1 let key stakeholders — from growers to consumers — scan and access the full journey of each individual piece of fruit.

The Thai side uploaded all that traceability data, as well as transport information, to the Chinese platform using an EPCIS 2.0 interface provided by GS1 China. When the durians arrived in China, authorities scanned the QR Codes and added more data, such as customs declaration numbers, port of entry, time of entry and inspection certificates.

All data was then integrated and synchronised, creating a complete and unified view of each shipment.

To enable this level of full traceability, the pilot used the following GS1 standards at key points in the supply chain:

- **GTIN and serial number:** Identified each individual durian with a unique combination, carried in a QR Code powered by GS1.
- **GLN:** Identified the grower, packer and shipper in Thailand.
- **GSIN:** Identified each truck transporting durians to China.
- **EPCIS:** Captured and shared data on harvest, packing, transport, customs clearance and import - covering everything from grower details and product information such as GTIN, batch number, product image and brand, to picking time, planting location, inspection reports, certificates, and more - enabling real-time visibility across borders.

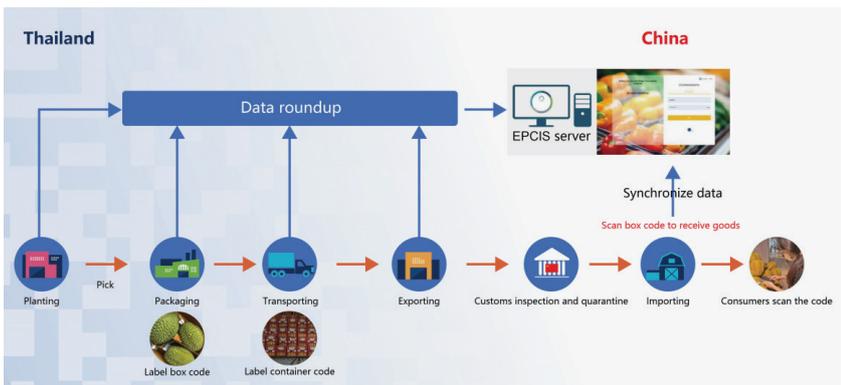


Accessible, transparent data for all stakeholders

Using a smartphone or compatible scanning device, customs authorities, importers, logistics providers, retailers and consumers can access the full chain of traceability information. Regulatory authorities can use the QR Code to access and check certificates, conduct inspections and support real-time supervision.

Retailers who have already enabled their systems to scan QR Codes powered by GS1 at the point of sale can perform smooth checkout processes.

Meanwhile, consumers can instantly view transparent information about the product's origin, journey and certifications, ensuring quality and boosting their confidence.



A foundation for smarter trade

This pilot demonstrated the ability of GS1 standards to support safe, trusted and digitally enabled trade of perishable goods between countries. It also laid the foundation for further collaboration in building smarter, greener and more resilient food systems across the region.

This project was one of two pilot demonstration initiatives launched under the Greater Mekong Subregion Sustainable Agriculture and Food Security Program (SAFSP), a technical assistance programme supported by the Asian Development Bank (ADB). SAFSP supports the GMS Strategy for Promoting Safe and Environment-Friendly Agro-Based Value Chains, endorsed by GMS Ministers of Agriculture in 2017. The programme aims to position the region as a global supplier of safe, climate-friendly agri-food products.



Real-time traceability supports customs checks, safety rules and food fraud prevention.

How GS1 standards power trust and confidence

GS1 standards enable global traceability by supporting the trusted sharing of information between systems and stakeholders, ensuring seamless interoperability.

At the heart of this is the EPCIS standard, which captures key events in a product's journey—what, when, where, why, and how—providing accurate, real-time visibility across systems and partners.

GS1's unique identifiers, such as Global Trade Item Numbers (GTINs) and Global Location Numbers (GLNs), enable tracing of products and locations across the supply chain.

QR Codes powered by GS1 connect each product's unique identity to trusted online information with GS1 Digital Link. They carry essential data such as GTINs, batch or lot numbers, serial numbers, expiry dates and more, and scan at checkout.

By linking to web-based content, they give consumers and stakeholders access to product details, certifications, care instructions, sustainability credentials and more — all with a simple scan of a smartphone or compatible scanner.

At the same time, they improve transparency and traceability throughout the supply chain—helping businesses comply with regulations, improve inventory management, reduce waste and enable circular business models.

About ADB



The Asian Development Bank (ADB) is a regional inter-governmental development institution committed to promoting the social and economic progress of its developing member countries in Asia and the Pacific. It has 68 members, including 49 from the Asia-Pacific region and 19 from other parts of the world. China became a member of ADB on 10 March 1986.

Through policy dialogue, consulting services and the mobilisation of financial resources via co-financing operations—with support from official, commercial and export credit sources—ADB maximises the impact of its development assistance.

About GS1 China

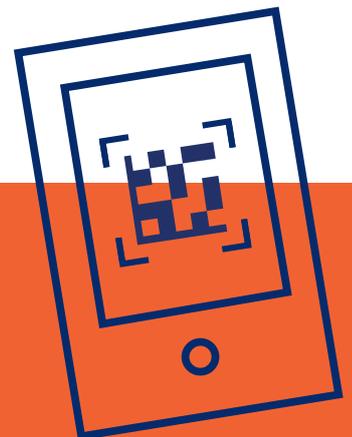


GS1 China was founded in 1988 under the authorisation of the State Council of the People's Republic of China as an affiliate of the General Administration for Market Regulation. It is responsible for organising, coordinating and administering article numbering and Auto-ID work across the country. Since becoming an official GS1 Member Organisation in April 1991, GS1 China has been committed to promoting GS1 standards, the most widely used, open, global, neutral standards for efficient business communication.

About GS1



GS1 is a neutral not-for-profit organisation that develops and maintains the most widely used global standards for efficient business communication. We are best known for the barcode, named by the BBC as one of “the 50 things that made the world economy.” GS1 standards improve the efficiency, safety and visibility of supply chains across physical and digital channels in 25 sectors. Our scale and reach—local Member Organisations in more than 110 countries, 2 million user companies and 10 billion transactions every day—help ensure that GS1 standards create a common language that supports systems and processes across the globe. www.gs1.org



Get started with next generation barcodes!

Contact your GS1 Member Organisation to see how GS1 can help you begin your journey toward next generation barcodes!

www.gs1.org/contact

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