



**GS1 Global Identification Keys:
the Foundation for
Excellent Supply Chain Management**



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The globalization of economic development and the shortening of product life cycles are driving enterprises to recognize the benefits of supply chain management, which can speed their innovation, improve the quality of services and products and sustain their competitive edge. Supply chain management can optimize the movement of products and raw materials and closely link the flow of physical goods to the related information flow. To meet greater customer demands in a highly competitive commercial environment, it is important for enterprises to develop cross-enterprise and cross-border collaboration with their trade partners. GS1 Global Identification Keys provide a foundation on which Hong Kong enterprises can build excellent supply chain management.

The GS1 Global Identification Keys constitute a comprehensive standard system designed to improve the efficiency and visibility of the supply and demand chains. It provides organizations in the supply chain with a "common language" for their day-to-day business operations, enhancing communications between customers and suppliers and achieving increased customer satisfaction.

Supply Chain Participants

The GS1 Global Identification Keys can support diverse applications used by supply chain participants:

► **Manufacturers**

Receiving and inventory management of raw materials and packaging, manufacturing, finished product inventory management, order picking, shipping and transportation.

► **Logistics Service Providers**

Receiving and product inventory management, consolidation and deconsolidation, product recall, final product assembly order picking, tracing and tracking, and shipping.

► **Retailers**

Receiving, inventory management, stocktaking, product picking, product distribution to shops, replenishment, product management, product tracing, product recall, and customer service.

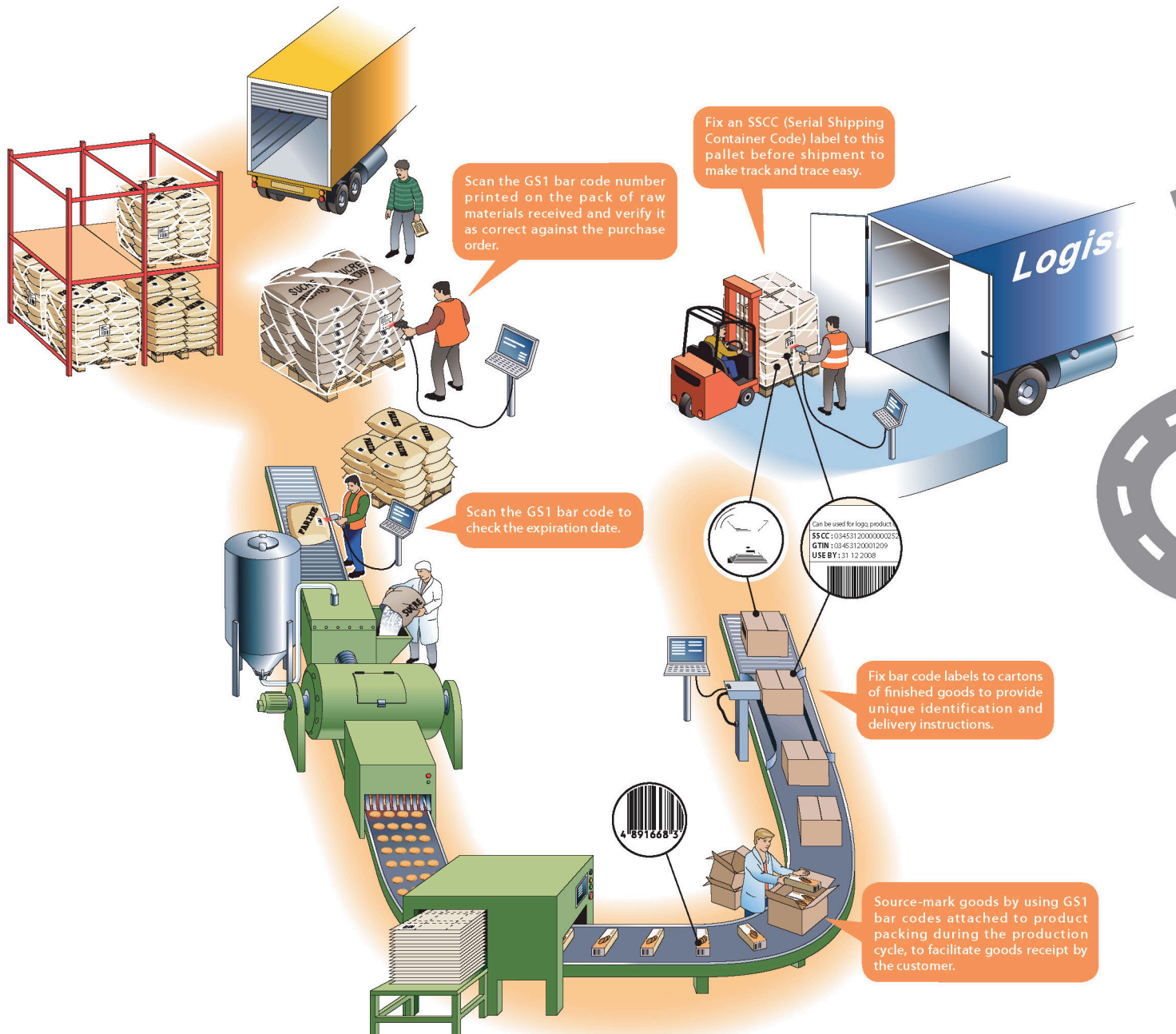
Benefits of Adopting the GS1 Global Identification Keys

The GS1 Global Identification Keys, together with the Automatic Identification Data Capture (AIDC) technique:

- Increases tracking reliability for products and materials;
- Increases the reliability of document exchange among supply chain partners and the accuracy of purchase orders, receipts and invoices;
- Eliminates duplicate inputs;
- Saves time in order picking, shipping and receiving;
- Improves traceability and transparency, which help to raise consumer confidence;
- Increases inventory reliability and optimizes inventories;
- Enables the automatic recording of data and thus improves information quality and traceability.

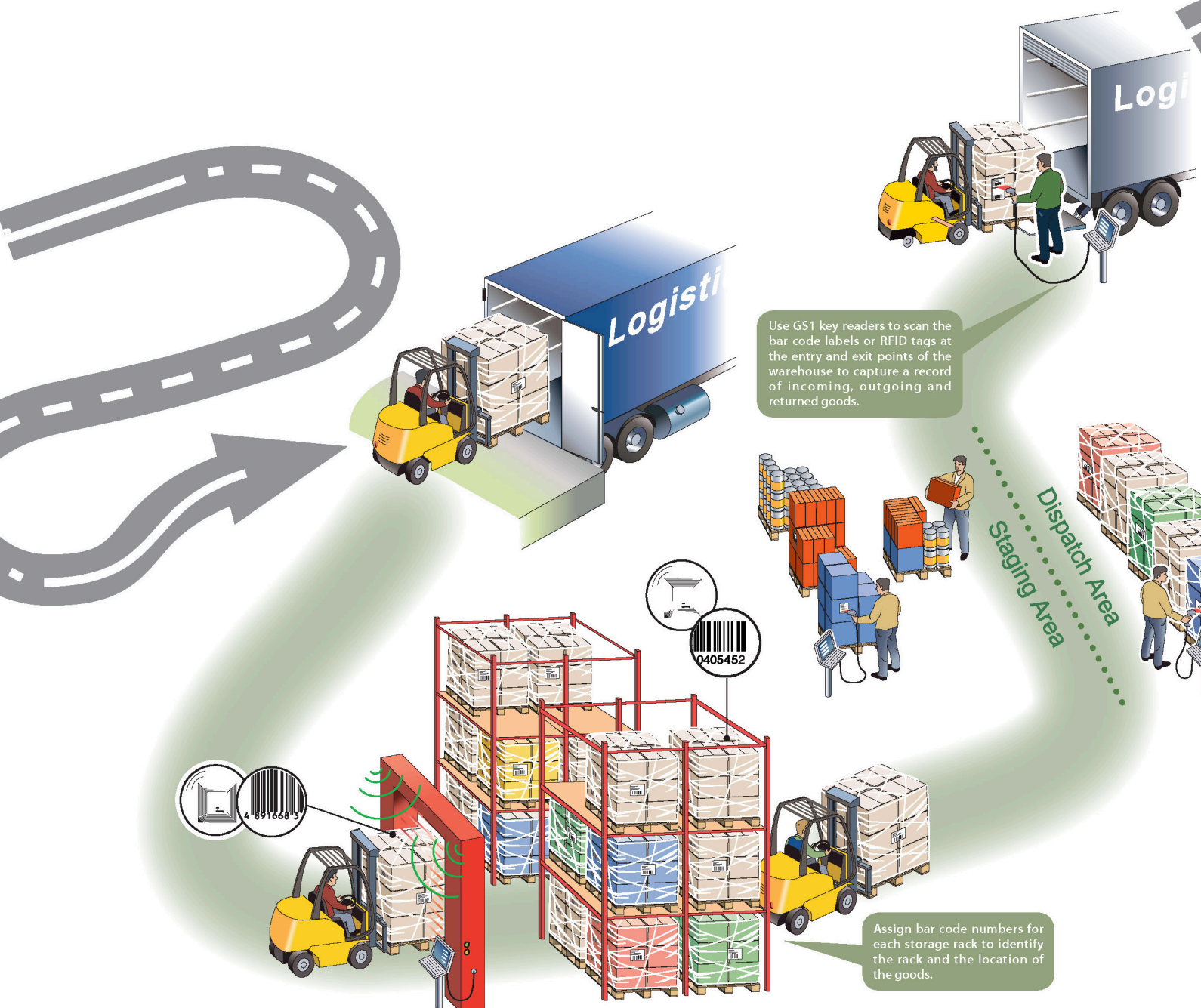


Manufacturer



Production

- Receive the Advanced Shipment Notice from a supplier, specifying the raw materials and their GTIN numbers, plus the arrival information.
- Scan the GS1 bar codes on the bags of raw materials to confirm receipt. The same scan registers the item code, batch numbers, expiration dates and other shipment details (Application Identifiers, AI).
- Scan GS1 bar codes to record the batch numbers of the raw materials being used for production.
- Assign GTIN and print GS1 bar codes on the finished goods packing.
- Link the production batch number with the raw materials used and show the data relationship in the system to make tracking and tracing easy.
- Assign GTIN and SSCC numbers for cartons, pallets and other logistics units.
- Record the SSCC and the content of the logistics units in the computer system. This information may include the GTIN, lot and batch numbers and expiration dates.



Goods Receipt

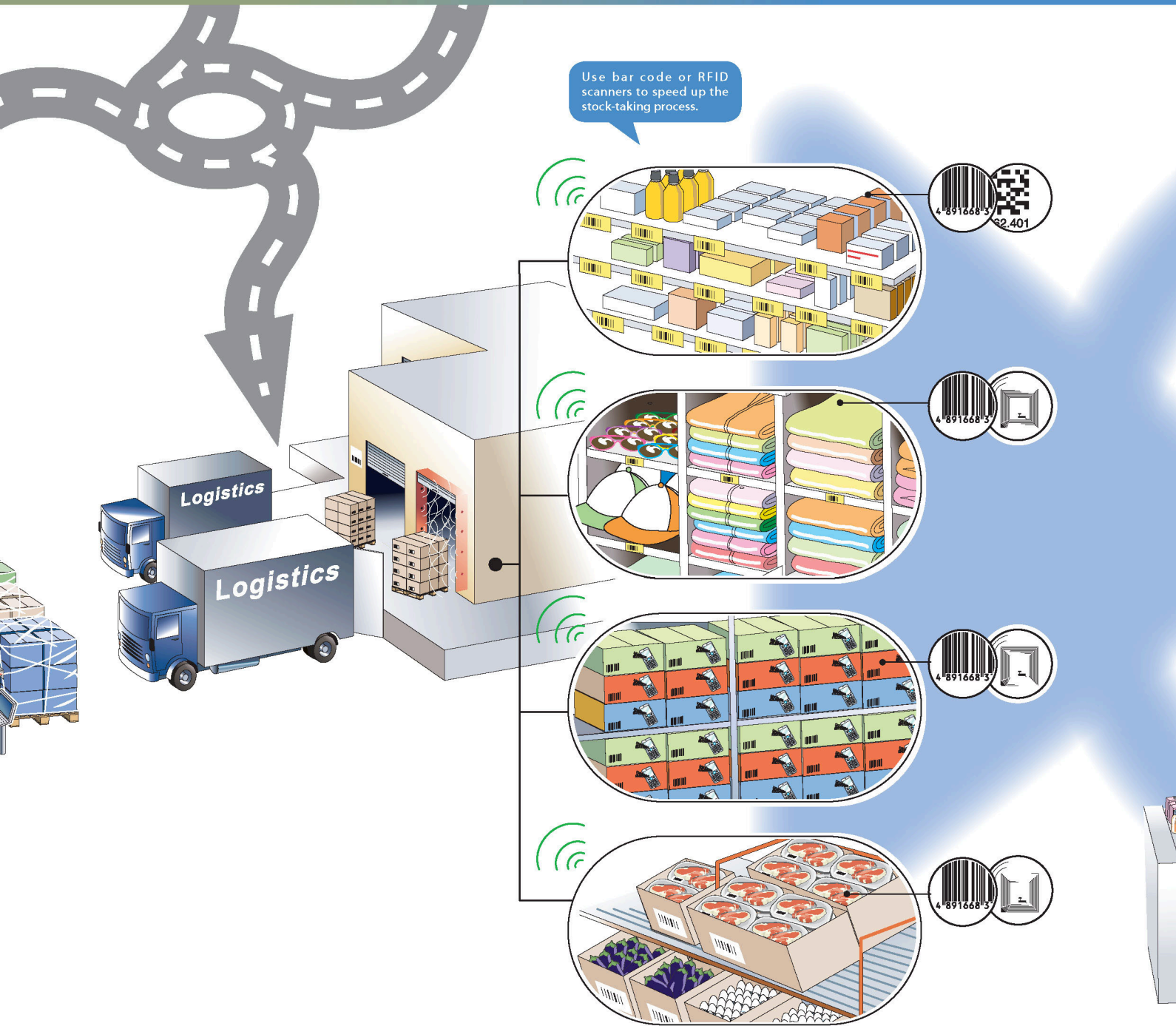
- Arrange manpower and space prior to goods receipt, based on the shipping notice from upstream suppliers.
- When unloading the goods, use scanners to read the GTIN and SSCC bar codes and record related information.
- Use GS1 bar codes to retrieve the corresponding order in the computer system. After checking, update the inventory records.

Warehouse Management

- Use GS1 bar codes as the key for storage management.
- Record the movement of merchandise.
- Assign zones and racks using GLN and generate GLN bar code labels for scanning.
- Read the goods location from the system and start order picking.
- Assemble the goods into logistic units such as cartons and pallets. Assign the GTIN, SSCC and related GS1 keys accordingly.
- Track inventory movements by linking relationship between SSCC, GTIN, batch numbers, and delivery destinations in the computer system.

Supply Chain Processes

Service Provider →



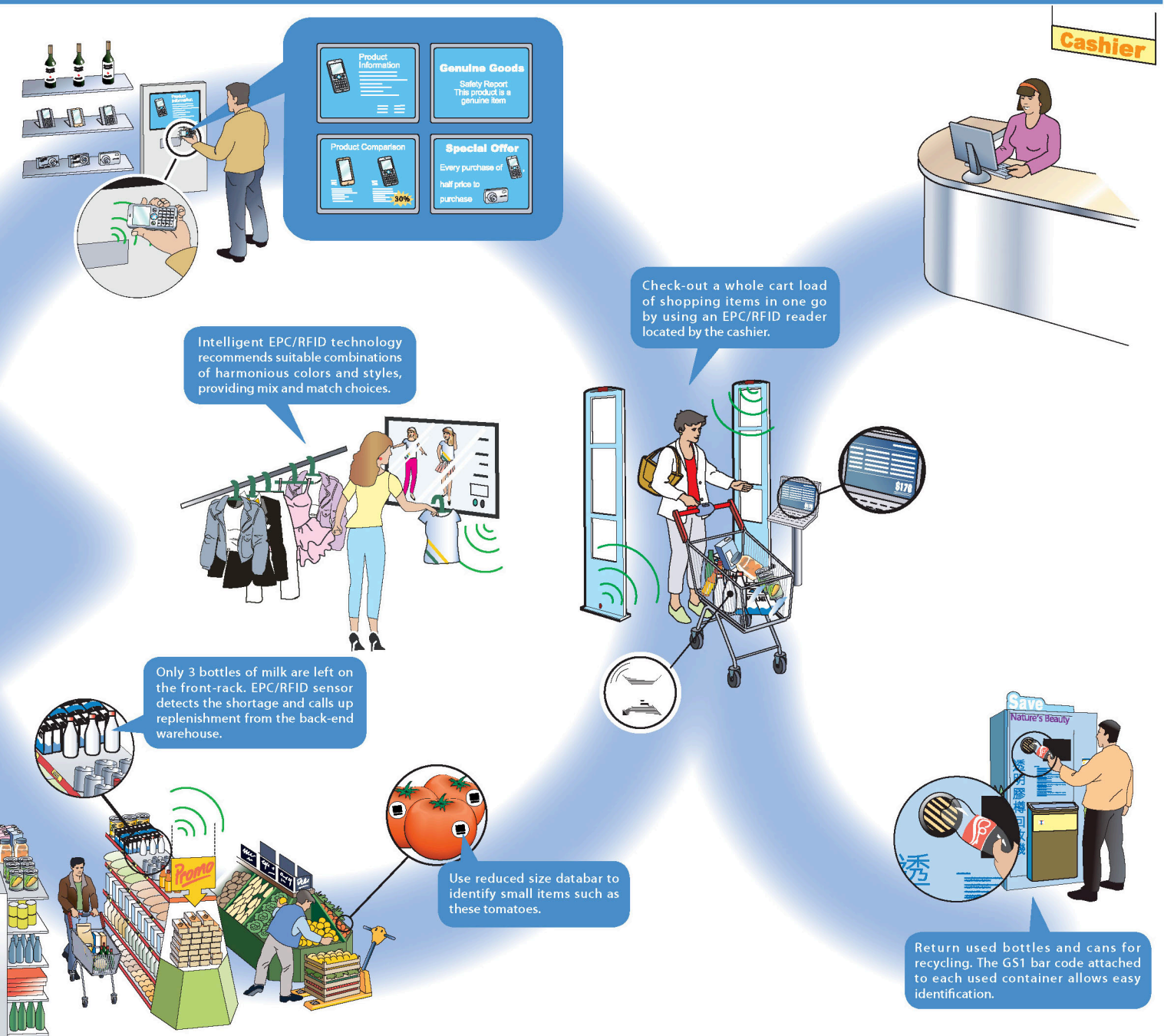
Shipping

- Before loading goods into the truck, use a GS1 bar code to indicate the SSCC for that truck. Then use a GPS (Global Position System) to track the location of the vehicle and the goods.
- Issue delivery notes based on the GTIN and GLN numbers shown on purchase orders.
- After delivery, the logistics service provider should submit the signed delivery note to the shipper client, or use an electronic signature to confirm receipt.

Receiving and Warehouse Storage

- Use GS1 bar codes to confirm received goods and simultaneously update warehouse records.
- Use GS1 bar codes or Electronic Product Code™/Radio Frequency Identification (EPC/RFID) technology to conduct stock-taking. Create replenishment alerts in the inventory management system.
- Use GLN to represent the shop ID and delivery address on the electronic purchase order.
- Record the batch numbers and expiration dates of the goods, using GS1 bar code numbers. Adopt a First-In-First-Out (FIFO) policy to reduce the chances of taking expired or obsolete stock.

Retailer

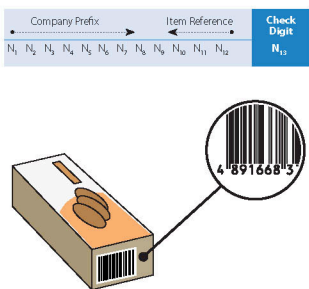


Examples of GS1 Global Identification Keys Applications in Retailers

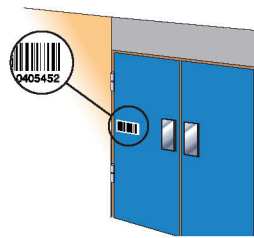
- Scan bar coded items to read the product introductions, functions and specification comparisons; promote hot items and cross-selling specials in the shop.
- Use GS1 bar codes or EPC/RFID tags as the key identifiers for the product authentication and traceability system.
- Use the batch number and expiration date shown on the GS1 bar codes to recall the right batch of problematic products from the market.
- Use Intelligent Fashion Mix-and-Match, by installing an EPC/RFID reader in a changing room mirror to read the labels of garments the customer selects to try on. This system displays recommended combinations of garments, color options and accessories available in the shop, providing useful advice and price information as a value-added customer service.
- Install EPC/RFID readers on the display racks to monitor the stock. When the stock level of an item is reduced to a specified threshold, the readers alert the system to issue replenishment order.
- Use EPC/RFID technology to enable customers to check-out all shopping cart items in one go. It provides greater customer service efficiency, and reduces the cashier's workload at point of sales terminal.
- Use GTIN to assign coupon or voucher numbers for easy numbering administration and management.
- Integrate the bar coded products or EPC/RFID-tagged products with the shop security system to trigger an alert for any outflow of unpaid goods.
- Use the GTIN shown on the product packing (bottle/can) to identify its corresponding models and packing, and recall for recycling purposes.

Data Identification

A **Global Trade Item Number (GTIN)** is a unique product identification number which is normally constructed from a company prefix, an item reference and a check digit. Company prefixes are assigned by GS1 local chapters to their corporate members. Item reference numbers are allocated by corporate members themselves.



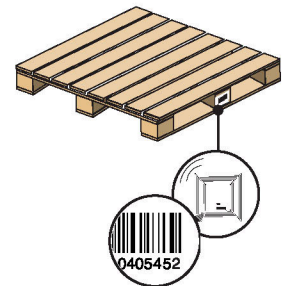
A **Global Location Number (GLN)** is a 13-digit number that identifies any physical location or legal entity involved in a transaction. For example, the order originator (company identification or department identification), the manufacturing plant (factory identification), and the delivery destination (ship-to-location identification).



A **Serial Shipping Container Code (SSCC)** is an 18-digit, globally unique identification number used for logistic units. The SSCC is used to manage the storage and shipping of the logistic units that are routed and traced independently. It is also the key to accessing the Advanced Shipment Notice (ASN), Dispatch Advice and related dynamic information such as the lot or batch number, expiry date, from the information systems. Such information can be provided in bar codes on GS1 logistic labels, readable by bar code scanners.



A **Global Returnable Asset Identifier (GRAI)** identifies any physical entity, particularly those used in transport as inventory items that travel continuously outside of the owner's facilities. This enhances the tracking of assets throughout their life cycles by all parties in the supply chain.



GS1 System

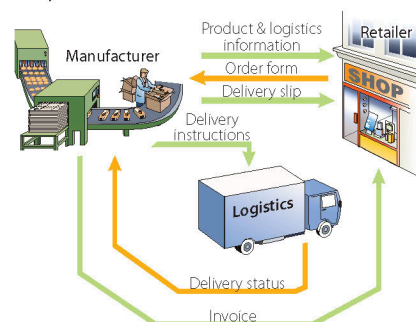
Data Capture

GS1-128 is a linear bar code symbology while **Data Matrix** is a 2D symbology. With GS1 Application Identifiers (AI), both GS1-128 and Data Matrix are able to carry additional information, such as GTIN, expiry date and lot or batch number. The choice of bar code depends on the data required for the business application, as well as the space available on the packaging. In the case of 'serialized products', and as part of the fight against counterfeiting, **Electronic Product Code™/Radio Frequency Identification (EPC/RFID) tags** might be used.



Data Communication

The development of electronic exchange technology (Internet or value-added networks) enables companies to connect the flow of physical goods with the relevant information flow, facilitating the smooth operation of supply chains. Product information at every stage along the supply chain can be translated into standard electronic messages that can be read and processed by supply chain partners anywhere in the world.



About GS1 Hong Kong

Founded in 1989, GS1 Hong Kong is a not-for-profit industry support organization. It is committed to enhancing Hong Kong enterprises' competitiveness through the provision of global supply chain standards, enabling technologies and best practices. As GS1's local chapter, GS1 Hong Kong is the only organization that is authorized to issue and administer GS1 identification numbers in Hong Kong. Standards and solutions offered include bar coding services, B2B e-commerce services, Global Data Synchronization (GDS) and Electronic Product Code™ / Radio Frequency Identification (EPC/RFID). The organization hosts a variety of training courses to facilitate knowledge transfer for SCM principles, e-business strategies, global standards and the implementation of enabling technologies. The GS1 community has over one million corporate members spanning 145 countries and economies and more than 20 industries around the world.



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