



The GS1 system of standards

Identify, Capture, Share

Introduction

To serve the end consumer, companies and other organisations have worked together in supply and demand chains. As end consumers, in all sectors, have become more sophisticated and using their mobile devices to research online before buying in shops, or vice-versa, these traditional supply chains are becoming networks with the consumer at the very centre. Such networks require open, multi-industry standards to operate effectively. The GS1 system of standards enables the identification of business items and communication of data about these items in ways that can be used in any industry, in any country and with any trading partner.

GS1 standards have many benefits including:

1. Working with all business partners in the same way is most cost-effective

For example, when business data is exchanged electronically and in a standardised manner with all trading partners the implementation effort and operational costs are much lower than compared to tailored solutions which are different for each trading partner. New or improved functionality can also be achieved with a critical mass of trading partners much faster.

2. Providing mutually beneficial solutions for companies that have no direct business relationship

For example, a manufacturer may mark a product with a barcode, the product is sold to retailers through a distributor and this barcode is read by all retailers who receive the product. The barcode is an interface between the manufacturer and the retailers, but the manufacturer's only business relationship is with the distributor. Provided all trading partners adhere to the standard, the GS1 system enables barcodes to be read by any standards based scanning system which is mutually beneficial to both manufacturers who can barcode their products in the same way for all customers, and for retailers who benefit from having all products barcoded in a consistent, standard, way.

These factors have a profound influence on the design of interfaces between trading partners and the end consumer:

- They require that interface definitions be negotiated and implemented outside the context of particular trading relationships, and be adhered to by all parties.
- They require broadly accepted industry standards in which the emphasis is placed on interoperability, maximum applicability to a broad range of business contexts and minimisation of the need for bilateral agreements.
- These are precisely the principles that underlie the GS1 system of standards.

About GS1

GS1 is an international not-for-profit association with Member Organisations in over 110 countries. GS1 is dedicated to the design and implementation of global standards and solutions to improve the efficiency and visibility of supply and demand chains globally and across sectors.

The GS1 organisation offers a supportive platform for companies to implement and refine these standards.

www.gs1.org



The purpose of the GS1 standards

The GS1 system of standards aims to raise the efficiency of business processes and to provide cost savings through automation based on globally unique identification and digital information.

GS1 standards facilitate interoperability in open supply chains. GS1 standards include data standards and information exchange standards that form the basis of cross-enterprise exchange.

GS1 standards foster the existence of a competitive marketplace for system components. GS1 standards define interfaces between system components produced by different vendors or in-house development teams. This provides choice to end users and leads to economies of scale, ultimately reducing costs for end users.

GS1 standards encourage innovation. GS1 standards define interfaces, not implementations. Implementers are encouraged to innovate in the products and systems they create. By building upon a standard foundation, implementers can have greater confidence in the eventual adoption of their products and systems, and therefore the confidence to invest in innovation.

Identify, Capture, Share

GS1 standards support the information needs of companies interacting with each other in supply chains, specifically the information required to support the business processes through which supply chain participants interact. The subjects of such information are the **real-world entities** that are part of those business processes.

Real-world entities include things traded between companies, such as products, parts, raw materials, packaging and so on. Other real-world entities of relevance to trading partners include the equipment and material needed to carry out the business processes surrounding trade, such as containers, transport and machinery; entities corresponding to physical locations in which the business processes are carried out; legal entities such as companies and divisions; service relationships; business transactions and documents; and others.

GS1 standards may be divided into three groups: Identify (GS1 standards for identification), Capture (GS1 standards for barcodes & EPC/RFID) and Share (GS1 standards for data exchange).



Identify

GS1 standards for identification

The GS1 standards for identification provide the means to identify real-world entities so that they may be the subject of electronic information that is stored and/or communicated by end users.

The GS1 identification standards include unique identifiers (called GS1 identification keys), which may be used by an information system to refer unambiguously to a real-world entity such as a trade item, logistics unit, physical location, document, service relationship or other entity.



Capture

GS1 standards for barcodes & EPC/RFID

GS1 standards for data capture provide the means to automatically capture data that is carried directly on physical objects, bridging the world of physical things and the world of electronic information.

The GS1 data capture standards include:

- Definitions of barcode and radio-frequency identification (RFID) data carriers, which allow GS1 identification keys and supplementary data to be affixed directly to a physical object.
- Standards that specify consistent interfaces to readers, printers, and other hardware and software components that connect the data carriers to business applications.



Share

GS1 standards for data exchange

GS1 standards for data exchange provide the means to share information, both between trading partners and internally, providing the foundation for electronic business transactions, electronic visibility of the physical and digital world, and other information applications.

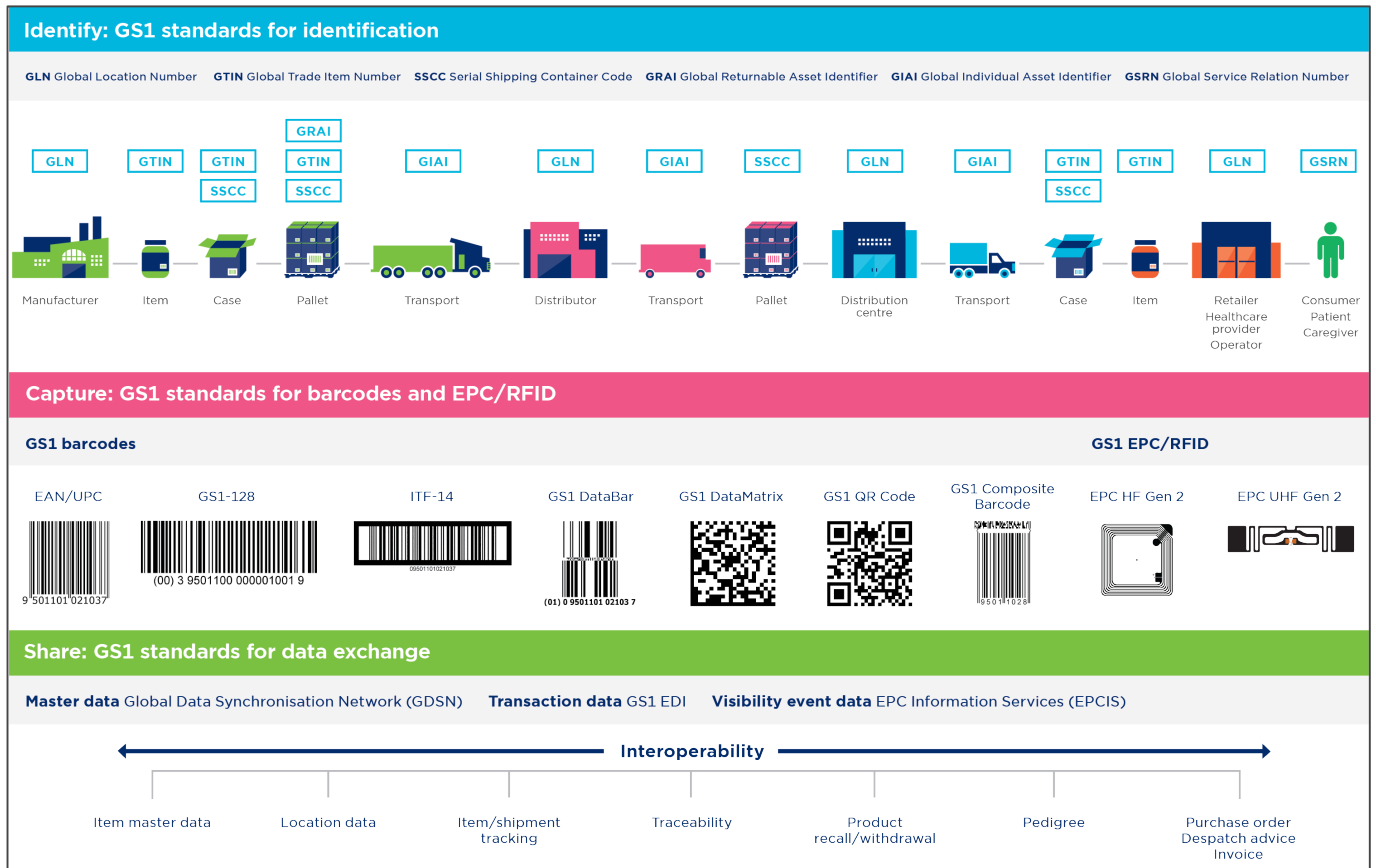
GS1 standards for information sharing are:

- Definitions of master data, business transaction data and physical event data.
- Tools for optimising online product search
- Communication standards for sharing this data between applications and trading partners.
- Discovery standards that help locate where relevant data resides across a supply chain and trust standards that help establish the conditions for sharing data in a secure way.

Using the GS1 system of standards

While GS1 standards may be used in any combination in a given business application, the “Identify, Capture, Share” paradigm is pervasive in situations where GS1 standards apply. Using the GS1 technical standards from the three groups can provide solutions for business applications like supply chain visibility, traceability, etc.

For example, consider the business processes that support the retail sale of consumer goods. GS1 standards are commonly used as follows:



Identify: GS1 standards for identification

Each trade item is assigned a GS1 Global Trade Item Number (GTIN). By adhering to **GS1 identification standards** all products receive a globally unique GTIN, so that any retailer is assured of having a unique way to refer to a given trade item in its information systems, and each product brand owner need only assign a single identification to its trade item.

Capture: GS1 standards for barcodes & EPC/RFID

Each trade item carries its GTIN directly on the product package using a barcode that adheres to the **GS1 barcode standards** (or alternatively using GS1-compliant RFID tags). Data capture systems conforming to GS1 standards are used to automatically and reliably record trade items as they move through the supply chain, from shipping to receipt to point-of-sale.

Share: GS1 standards for data exchange

The retailer obtains product master data from brand owners conforming to **GS1 master data standards**; such data is used in many ways, for example to display a concise description of the product when it is scanned at the point-of-sale terminal.

GS1 EDI standards may be used by the retailer to reorder product from the manufacturer when supplies run low.

GS1 visibility event data standards may be used to provide detailed information about events, such as what products entered and exited each store.

GS1 SmartSearch enables consumers to obtain accurate product data via online search results and smartphone scanning apps

Master data, electronic transaction data and visibility event data are all governed by GS1 data standards and use the GTIN or another GS1 identification standard to refer precisely to the appropriate trade items or other real-world entities.