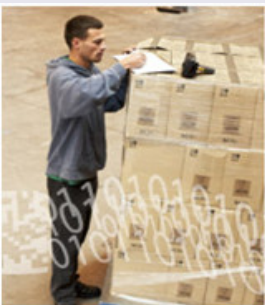# GS1 Identification Keys in Transport & Logistics

GS1 Guideline

Issue 1, Jun-2013

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Disclaimer

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1. Introduction

The GS1 System is the most widely used supply chain standards system in the world and comprises the standards, guidelines, solutions and services created in formalised and collaborative processes. The GS1 System is an integrated system of global standards that provides for accurate identification and communication of information regarding locations, products, assets, services and locations. The GS1 identification standards, known as GS1 Identification Keys, bring value by permitting secure and portable identification across technologies such as barcodes, RFID tags and electronic messages, and by connecting the physical flow of goods and services to the flow of information.

The Transport & Logistics industry involves the movement of goods using multiple transport modes, including road, rail, air and maritime. Similarly, this industry involves a wide variety of parties such as consignor and consignee, freight forwarders and carriers as well as official bodies like customs and port authorities. The combination of logistics channels and parties implies an opportunity to simplify asset and shipment identification using GS1 Identification Keys and sharing this information between carriers and other service providers.

This guideline provides guidance to identify equipment, locations, assets and logistic units and shipments used in the transport & logistics industry. It is based on GS1 standards described in the GS1 General Specifications and responses to a user questionnaire on actual use and implementation of the following identification keys.

■ **GLN** – Global Location Number

■ **GRAI** – Global Returnable Asset Identifier

■ **GIAI** – Global Individual Asset Identifier

■ **SSCC** – Serial Shipping Container Code

■ **GINC** – Global Identification Number for Consignment

■ **GSIN** – Global Shipment Identification Number

These recommendations have been developed in collaboration with GS1 Member Organisations and the Transport & Logistics (T&L) Member Organisation Interest Group working closely with local communities on Transport & Logistics process efficiencies.

2. Scope

This guideline is focused on the identification of:

- Locations

- Assets

- Logistic Units

- Transport Groupings

Each section contains a brief process description, examples and an overview of the recommended GS1 Identification Keys for each scenario.

This guideline does not recommend the selection of the most appropriate data carrier (e.g. bar code, RFID tag) for each scenario. Likewise, the eCom messages for sharing data are not described in this guideline. Please see the References section for additional resources for these areas. Please see the GS1 General Specifications for more information about the GS1 Identification Keys described in this guideline.

3. Location Identification

Business processes cause objects (products, assets, or other equipment) to move from one physical location to another. The ability to have visibility to these movements is an essential element in any supply chain[1]. These physical locations can be a site such as a distribution centre or a specific location within the site such as a selling floor; it can even be as granular as a specific area on a shelf.

In logistics, physical locations are an essential dimension of the planning, control and execution processes. These processes rely heavily on real time sharing and processing of information, and unambiguous location identifiers are an important prerequisite for automated processing.

3.1. GS1 Identification Key for Location Identification

3.1.1. GLN – Global Location Number

The GLN is the GS1 Identification Key for Locations. The GLN can be used to identify physical locations and parties where there is a need to retrieve pre-defined information to improve the efficiency of communication with the supply chain.

Please refer to the GLN allocation rules http://www.gs1.org/1/glnrules/ for guidance on assigning and changing GLNs.

The location owner typically assigns the GLN and manages the related master data. Exceptions to this rule are described in the following sections.

Besides the use of the GLN in a data carrier, the GLN is applied in GS1 business message standards. For each location type described in this chapter, the related GS1 eCom party role names are provided.

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[1] From GS1 General Specifications, Section 2 – Physical Location

3.1.2. GLN extension

The GLN extension component is used to identify internal physical locations within a location identified with a GLN (e.g., stores, factories, buildings). The use of GLN Extension Component is restricted to physical locations.[2]

3.2. Business locations

3.2.1. Legal entities / commercial entities

The legal entity or commercial entity is the company responsible for buying or selling a good or service, and paying taxes, duties or fees. In any business process the companies involved need to be unambiguously identified.

Recommended GS1 Identification Key: GLN

Related eCom roles: *goods buyer / seller, logistic services buyer / seller, consignor / consignee, shipper / receiver*.

3.2.2. Facilities

A facility is physical location with a specific address where a business performs operational activities. A location may consist of multiple buildings, as long as these are located at the same address.

✅ **Note:** For the purposes of this guideline, buildings may also include structures without walls and roof such as container depots, car parks.

Figure 1: Facilities

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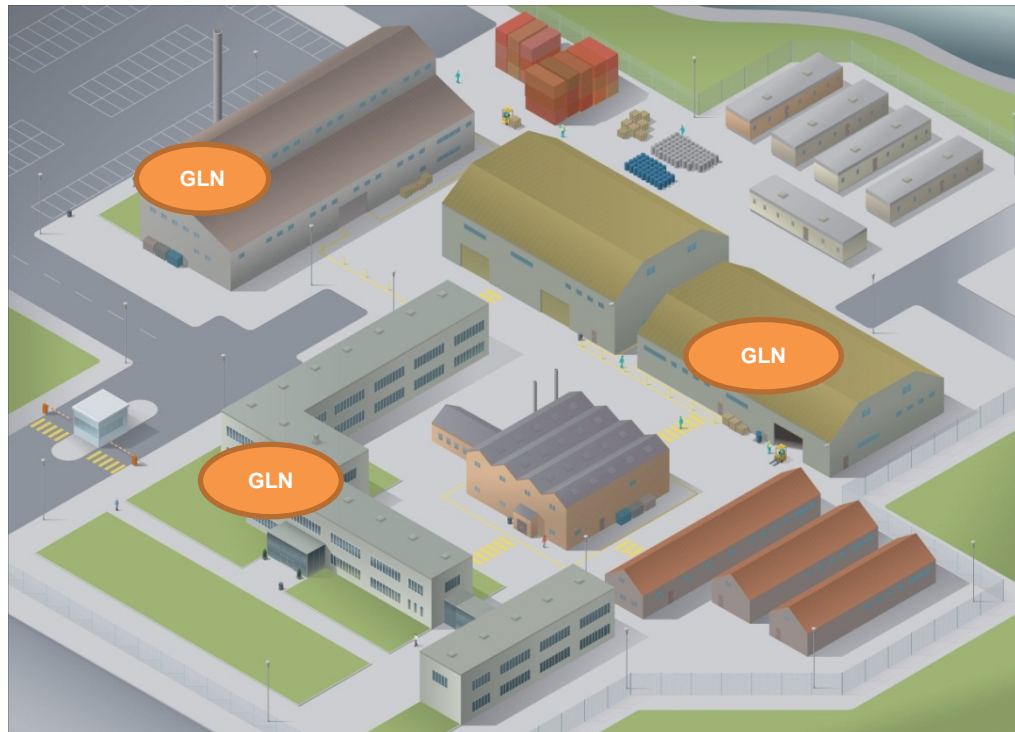
[2] GS1 General Specifications, Section 8: GS1 Standards Glossary of Terms

Recommended GS1 Identification Key: GLN

Related eCom roles: *Ship from / Ship to, Pick-up / Drop-off, Inventory locations*

3.2.3. Locations within a facility

A facility consists of various spaces that may need to be identified for logistic purposes. Examples include floors, rooms, and shelf locations. For warehouses, spaces around the building such as yards may be important as well.

Figure 2: Locations within a facility
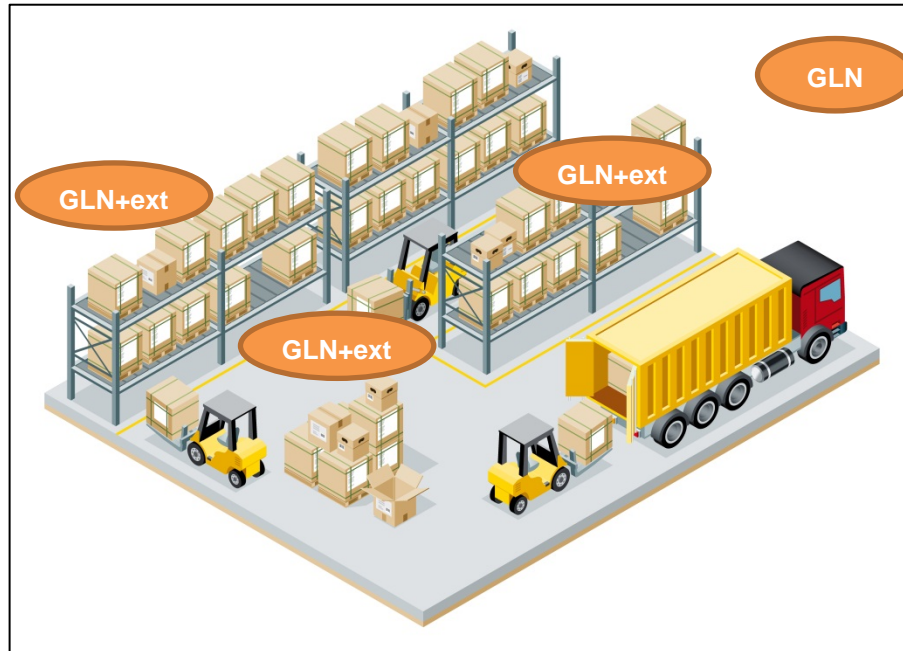
Recommended GS1 Identification Key: GLN or GLN + GLN Extension Component

The GLN Extension Component enables a large number of locations to be identified without exhausting the number of available GLNs based on an organization's GS1 Company Prefix (GCP).

In most cases, GLN Extension Components are used internally and are not shared with trading partners. Cases where inventory locations are shared, include outsourced warehouses or when specific inventory traceability needs to be shared between partners.

Related eCom roles: *Inventory sub-location*

3.2.4. Special Location Cases

3.2.4.1. Temporary locations

Temporary locations exist for a limited period. Examples include a construction project or a festival. These locations are operating locations, and GLNs should be used to identify them. The GLN should be assigned by a party operating at the location.

Note: Temporary locations may not always have an address. In these cases, geographical coordinates, postal area codes and textual information may be needed to describe the identified location.

3.2.4.2. Mobile locations

Transport means such as ships and airplanes may also be shipment destinations. In such cases, these types of locations are best treated as facilities, with the GLN as main identifier. Although transport means do not have a fixed address the GLN allows for easy adoption of existing standards, such as eCom order-to-cash.

Note: GLNs should not be used to identify the transport means as an asset. Please see Section 4.2 for guidance on identifying transport means as assets.

3.2.4.3. Hosted locations

Hosted locations are locations situated within a facility owned by another party. These locations should be treated as facilities and identified by the GLN.

The GLN should be assigned by a party operating at the location. This may lead to multiple GLNs corresponding to the same address, for example for each shop located within the same store.

3.3. Government locations

Government agencies such as customs offices, tax authorities and product safety agencies play an important role in supply chains. Parties may need to know the geographical location of the relevant agencies.

Note: Where governments act as parties buying or selling goods or services, they should be identified according to business location guidance outlined in Sections 3.2.1 Legal entities / commercial entities or 3.2.2 Facilities.

3.3.1. Agencies

An agency is a government body responsible for a specific regulatory task such as tax collection. Usually these agencies are identified by other means than GLNs.

Related eCom terms: *duty fee tax agency*.

3.3.2. Offices

An office is a specific location where a government agency conducts its activities. These office locations should be treated as facilities.

3.4. Consumer locations

3.4.1. Persons

In transactions involving an individual consumer, that individual consumer needs to be identified.

It is not recommended to assign a GLN to a consumer. In some cases the Global Service Relation Number (GSRN) may be applicable (see the GS1 General Specifications for more information).

3.4.2. Physical address

In transactions involving individual consumers, goods or services may need to be delivered to a home address or other defined delivery point. Where no GLN exists, structured address information should be provided.

3.5. General trade and transport locations

Identifying general transport locations such as cities, seaports, or airports may be may be required for specifying delivery terms or transport routes.

Figure 3: Seaport

For such general locations, which are not linked to a particular company, **it is not appropriate to assign a GLN**. Communication of these general locations may be based on non-GS1 standard code lists, such as the UN/LOCODE[3].

✓ **Note:** Locations owned or managed by a specific company, such as a port terminal, should be identified with a GLN.

Related eCom roles: *Delivery terms location, Logistic Location*

4. Asset Identification

This section describes assets that are used throughout the industry and provides recommendations for the most appropriate GS1 Identification Key to identify each asset.

Assets in Transport and Logistics include:

- Transport Means such as trucks, ships, airplanes.
- Transport Equipment such as trailers, intermodal containers, wagons.
- Returnable Transport Items such as pallets, roll-containers, crates.

All assets start their lifecycle as a trade item (merchandise) identified by a Global Trade Item Number (GTIN). Once a company acquires such a trade item (e.g. logistics service provider, pool operator or another company), the company may classify that item as an asset. Each asset requires an appropriate identifier to ensure efficient asset management.

Asset identification and management is dependent on the type of application and owner. The following terms identify the role an organisation plays in identifying assets.

- Asset Manufacturer: Party producing the asset. The Asset Manufacturer normally will not assign his own asset identifier, but he may be instructed to physically apply the asset identifier assigned by the Asset Owner during the manufacturing process.

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[3] See: http://www.unece.org/cefact/locode/service/location.html. Please note that GS1 is not responsible for external code-lists.

■ Asset Owner: Party that legally owns the asset. The Asset Owner is responsible for the assignment of the asset identifier.

■ Asset User: Party that has the asset in use, not necessarily the owner of the asset.

4.1. GS1 Identification Keys for Asset Identification

Assets represent a value to their owner. Therefore, each asset needs to be appropriately identified to ensure each asset is accurately recorded and tracked.

The GS1 System provides two keys to identify assets,

■ **GRAI**: Global Returnable Asset Identifier

■ **GIAI**: Global Individual Asset Identifier

The recommended use of either GRAI or GIAI is based on the asset type and business application. Assets may be classified as either individual or returnable based on the following definitions.

Returnable Asset

A reusable entity owned by a company that is used for transport and storage of goods.[4]

Returnable assets are moved between multiple locations and transferred between multiple parties along the supply chain. Typical examples are totes, beer kegs, roll containers, crates and pallets.

Individual Asset

An entity that is part of the inventory of assets for a given company[5].

Individual assets are typically used in the same location or by a single user. The owner of an individual asset typically documents and tracks each asset for inventory and financial records and to facilitate maintenance. Examples include computers, production facilities, furniture and manufacturing equipment.

Important: Asset identifiers are not intended to identify goods being transported or stored using the assets. Asset identifiers may be used to associate assets with particular shipments, consignments or logistic units in order to enhance visibility. See Sections 5.1, 6.1 and 6.2 for more information on identification of logistic units, shipments and consignments.

4.1.1. GRAI – Global Returnable Asset Identifier

The GS1 Identification Key used to identify returnable assets. The key comprises a GS1 Company Prefix, Asset Type, Check Digit, and optional serial number.[6]

The main purpose of the GRAI is to identify the asset class. This means that the same GRAI is assigned to all assets of the same type. The GRAI also provides an optional serial number. If each instance of the returnable asset needs to be identified, then the optional serial number must be used.

The asset owner assigns a GRAI to each returnable asset. It may be used to automatically sort returnable assets by owner and asset type to facilitate asset use billing and other applications. Where assets of the same type need to be ordered a GTIN is required for the ordering process. There is no conflict when a GTIN and a GRAI (GS1 Company Prefix, Asset Type and Check Digit) have the same

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[4] GS1 General Specifications, Section 8: GS1 Standards Glossary of Terms
[5] GS1 General Specifications, Section 8: GS1 Standards Glossary of Terms
[6] GS1 General Specifications, Section 2

digits, because the data carrier (EDI qualifier, GS1 Bar Code with GS1 Application Identifier, or EPC/RFID) will distinguish between the two GS1 Identification Keys.[7]

4.1.2. GIAI – Global Individual Asset Identifier

The GS1 Identification Key used to identify an Individual Asset. The key comprises a GS1 Company Prefix and Individual Asset Reference.[8]

The GIAI identifies individual assets such as office desks, computers, and machinery. It does not contain a classifying element as in the GRAI but always includes a unique serial component. Therefore, a GIAI always identifies each instance of an individual asset.

The GIAI is assigned by the asset owner. Generally, individual assets are in the possession of a single party for extended periods of time and do not frequently change hands. Therefore, the GIAI is less shared outside the IT-systems of the organisation that owns the asset than the GRAI.

✓ **Note:** Some individual assets, such as tractors, trailers, forklifts, reach trucks, pallet trucks and other equipment are rented to third parties. In these cases, the owner expects the exact same asset to be returned at the end of the lease period. The GIAI helps to ensure this.

4.2. Transport Means

Transport means are vehicles used to transport logistic units and transport equipment (e.g. trailers, wagons, and containers).

Figure 4: Transport Means
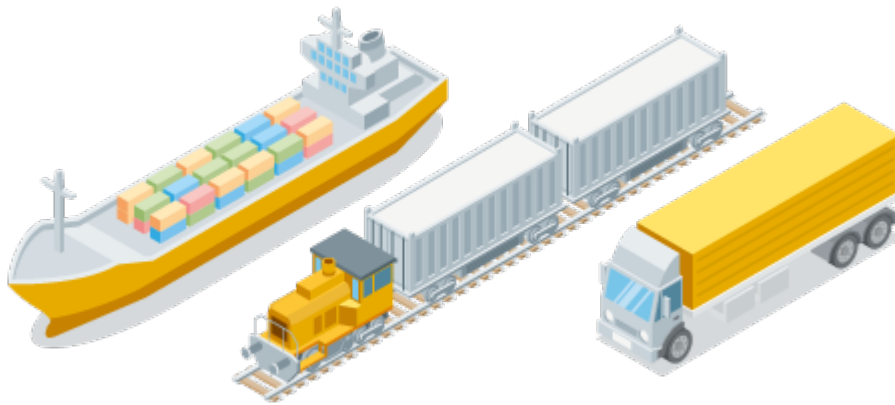
Transport Means include fixed assets such as:

■ semi-trailer trucks

■ delivery trucks

■ ships

■ locomotives

■ aircraft

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[7] GS1 General Specifications, Section 2
[8] GS1 General Specifications, Section 2

Recommended identification GS1 Identification Key: GIAI

The vehicle owner should identify the vehicle as an internal asset using the GIAI.

4.3. Transport Equipment

Transport equipment is defined as a piece of high-value equipment used to hold, protect or secure cargo for transportation purposes. Transport equipment as defined in this guideline excludes reusable secondary packaging and reusable load carriers, these are discussed in Section 4.4 Returnable Transport Items.

Figure 5: Transport Equipment

4.3.1. Trailers

Trailers are unpowered vehicles pulled by a powered vehicle[9] such as a semi-trailer truck. These trailers may be used to hold logistic units or may be used to transport shipping containers.

Recommended identification GS1 Identification Key: GIAI

Trailers are typically owned or leased by the transport service provider. The owner of the vehicle, either a leasing company or transport service provider, should assign a GIAI to identify the vehicle. Please note that trailers are not considered returnable transport items (RTI), so the GRAI is not an appropriate identifier.

4.3.2. Wagons

Wagons, also known as railroad cars, are vehicles in a rail transport system (railroad or railway) used for carrying cargo or passengers. Multiple wagons are coupled into a train and hauled by one or more locomotives[10]. Wagons are mainly used in rail transport.

Recommended identification GS1 Identification Key: GIAI

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[9] From Wikipedia, see http://en.wikipedia.org/wiki/Trailer_(vehicle)
[10] From Wikipedia, see http://en.wikipedia.org/wiki/Railroad_car

Please note that wagons are not considered to be exchangeable. Similarly, wagons are not returnable transport items, so the GRAI is not an appropriate identifier.

4.3.3. Intermodal Containers

Intermodal containers are standardized reusable steel boxes used for the safe, efficient and secure storage and movement of materials and products within a global containerized intermodal freight transport system[11]. Container sizes and specifications are defined in ISO standards and are often identified using an International Container Bureau (BIC) number. Although designed primarily for ocean shipping, intermodal containers may be transported by road or rail.

Recommended identification GS1 Identification Key: GIAI

4.4. Returnable Transport Items

Returnable Transport Items (RTI) are used for moving or transporting goods and can be divided into two main types:

- Returnable Secondary Packaging
- Returnable Load Carriers

Note: Returnable Primary Packaging such as bottles and cans do not fall under Returnable Transport Items.

Returnable Transport Items (RTIs) are typically classified according to size, weight, application, or material and are often managed as exchangeable items rather than as individual assets.

Figure 6: Returnable Transport Items

RTIs should be identified based on the asset ownership. The RTI owner may be a pool operator that leases these assets to retailers, manufacturers or logistics service providers. The owner may also be a retailer, manufacturer or material supplier. In either case, the owner may identify the asset taking into account the following guidelines:

4.4.1. Returnable Secondary Packaging

Returnable secondary packaging includes totes, plastic crates, and other durable containers used for transporting goods.

Recommended identification GS1 Identification Key: GRAI

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[11] From Wikipedia, see http://en.wikipedia.org/wiki/Intermodal_container

Secondary packaging may be put into circulation by a pool operator. In these cases, the pool operator, as the owner, should assign the GRAI.

Manufacturers and retailers often use their own custom-designed returnable secondary packaging. In these cases the manufacturer or retailer, being the owner, should assign the GRAI.

4.4.2. Returnable Load Carriers

Returnable load carriers include pallets, and rolling materials such as roll containers, dolly, garment racks, etc.

Recommended identification key: GRAI

Returnable load carriers are often managed by pool operators. Since pallets typically circulate in the transport and logistics environment, the GRAI is recommended. Additional information for labelling RTIs, particularly pallets, is available in the RTI (Pallet Tagging) Guideline.

4.5. Additional Asset Identification Scenarios

4.5.1. Mergers and Acquisitions

If the organisation that owns the asset is acquired by another organization, then the new owner may continue using the existing asset identifier. In this case, GS1 Company Prefix must be transferred to the new owner.

In the case of a merger, management must determine whether it will retain any existing GS1 Company Prefixes maintained by any party affected by the merger. The disposition of GS1 Company Prefixes should be coordinated with the GS1 Member Organization that issued those prefixes.

4.5.2. Asset Sales

When assets are sold, the new owner should assign an appropriate identifier (GIAI or GRAI) based on the new owner's GS1 Company Prefix. Purchase and payment documents (e.g. purchase order and invoice) may reference the old or new asset identifier. Once the new owner takes possession, the new identifier should then be used to manage the asset.

Often assets are permanently marked with the asset identifier. When an asset is sold, the original identifier should be removed or obscured to the greatest degree possible, ensuring the new identifier would not be confused with the identifier assigned by the previous owner. It is permissible for the asset identifier to remain on the item when the ownership changes if the new owner takes responsibility for the GS1 Company Prefix associated with the asset identifier.

5.   Logistic Unit Identification

Logistic units are goods packaged together for transport and storage. Logistic units take many forms, a single box containing a limited number of products, a pallet of multiple products, or an intermodal container containing multiple pallets.

As a logistic unit moves through the supply chain, a series of events occurs that defines the information related to the unit. The whole supply chain process of manufacturing, finished goods distribution, transportation, and deployment into the marketplace adds layers of information related to the logistic unit. For example, the physical content of the unit is typically defined at finished goods distribution. At that time, the identification of the logistic unit as an entity is possible. Other elements of information, such as final destination or the composition of a multi-unit shipment, are not typically known until later in the supply chain process. In a trading relationship, different elements of information are generally known and applied by the supplier, carrier, and customer.

5.1.   GS1 Identification Key for Logistic Unit Identification

Figure 7: Pallet and logistics label with SSCC

5.1.1.   SSCC – Serial Shipping Container Code

The Serial Shipping Container Code (SSCC) is the GS1 Identification Key for logistic units in the GS1 System. The SSCC provides a single, global means of uniquely identifying logistic units, which can be any combination of items packaged together for shipment.

In some cases, a brand owner may consider a logistic unit an orderable trade item. In that case, the logistic unit should also be identified with a GTIN. However, the GTIN may not replace the SSCC as the logistic unit identifier for shipment.

The SSCC is a unique 18-digit number that comprises an Extension Digit, GS1 Company Prefix, Serial Reference and Check Digit, which remains the same for the life of the logistic unit to which it is assigned. While SSCCs may be re-used, they may not be reallocated within one year of the shipment date. The physical builder or the logistic unit brand owner assigns the SSCC.[12]

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[12] From GS1 General Specifications, section 4

Figure 8: Formation of SSCC with GTINs

GTIN 31251234567894 GTIN 31251234567894
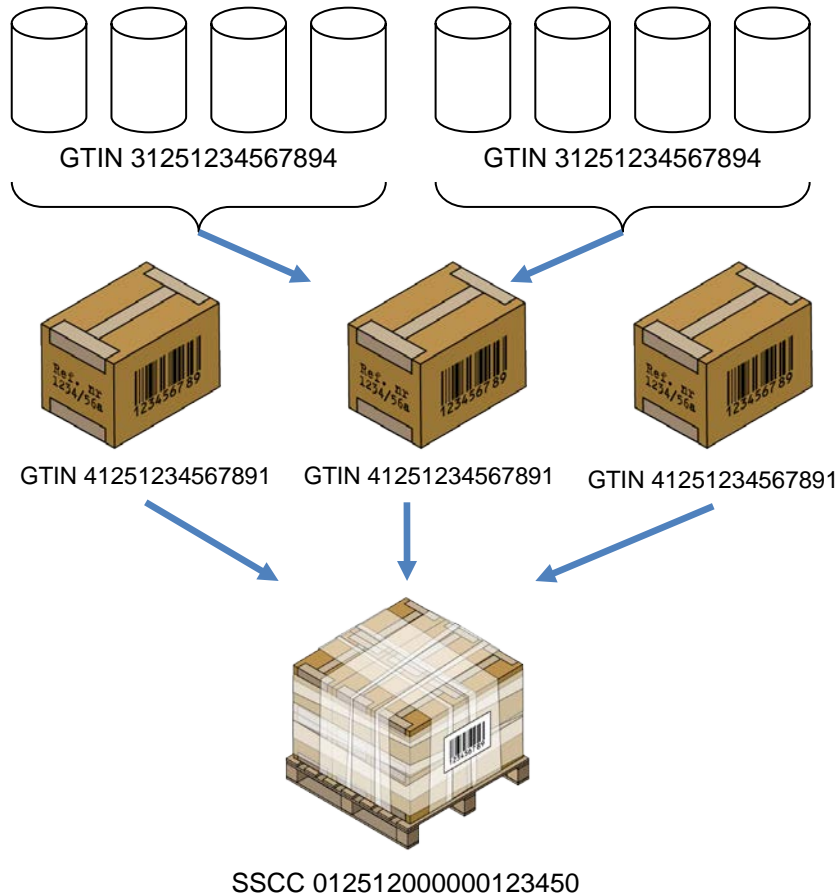
GTIN
Identification of trade items on all levels of packaging that are sold at retail check-out or are in the seller's price list.

GTIN 41251234567891   GTIN 41251234567891   GTIN 41251234567891

SSCC
Unique identification of a logistics unit. Valid for the lifetime of that unit to only be used for material handling. The transport or logistics unit may also display a GTIN if that unit is part of the seller's offering and contained in the price list.

SSCC 012512000000123450

5.2.   GS1 Standards for Logistic Unit Management

5.2.1.   GS1 Logistic Label

Recording and monitoring the movement of logistic units is an essential part of supply chain management. Logistics labels help to track logistic units. Companies often need to label and re-label logistic units at each stop on the way to their destination. This slows things down, creates inefficiencies and opens the process up to confusion, errors and oversights. These inefficiencies add unnecessary costs to supply chain operations.

The GS1 Logistic Label specifications detail the structure and layout of logistic labels. Please see the Standard International Logistic Label for more information. This document describes basic logistic unit identification and labelling requirements for application in an open trade environment. Topics include:

■   The unambiguous identification of logistic units

■   The efficient presentation of text and machine readable data

■   The information requirements of the key partners in the supply chain: suppliers, customers, and carriers

■   Technical parameters to ensure systematic and stable interpretation of labels

5.3.   Identifying Palletized Logistic Units

Pallets contain stacked trade items such as cases or crates. The recommended use of a logistic label and SSCC depends on the structure and content of the pallet.

Figure 9: Palletized Logistics Unit

5.3.1.   Homogeneous pallet

A homogeneous pallet contains only one trade item. In cases where batch control, expiration or other product characteristics need to be controlled, a homogenous pallet should also contain products with the same relevant variable product attributes.

Recommended identification key: a single SSCC

5.3.2.   Mixed pallet

A mixed pallet contains more than one trade item. In some cases also a pallet with one trade item, but with different variable product attributes, is considered a mixed pallet.

Recommended identification key: a single SSCC

5.3.3.   Stacked pallets

Stacked pallets, also referred to as sandwich pallets, are groups of pallets that are stacked for shipment.

Recommendation: When pallets are stacked they should be considered independent logistic units (Figure 10), each pallet must be identified with a unique SSCC. If the group will be shipped as a unit and is joined using shrink-wrap, straps, or similar means (Figure 11), the group should be considered as a single logistic unit and an additional SSCC should be assigned to the stacked pallet group.

Figure 10: Stacked Pallets as Independent Logistics Units

Pallet 1
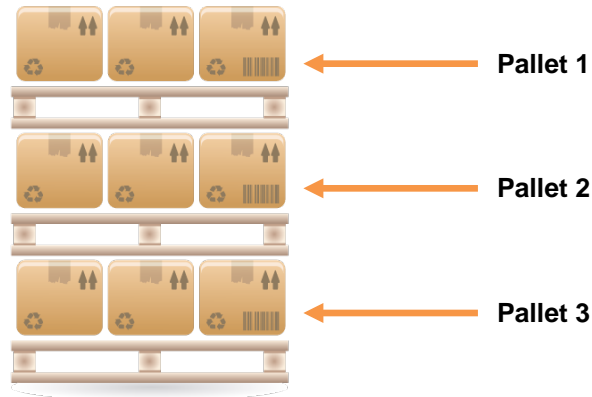
Pallet 2

Pallet 3

Note: In cases where the stacked pallets are shipped as a unit, the original labels should not be visible. A master label with the SSCC for the pallet group should be applied to the outside of the wrapping. The wrap and master label may be removed upon receipt and the labels for each stacked pallet will be used to identify each pallet for subsequent processing.

Figure 11: Stacked Pallets as Single Logistics Unit

Logistic Label

Shrink Wrap

SSCC
(00)790123451234500116

GTIN
(01) 490123450008794
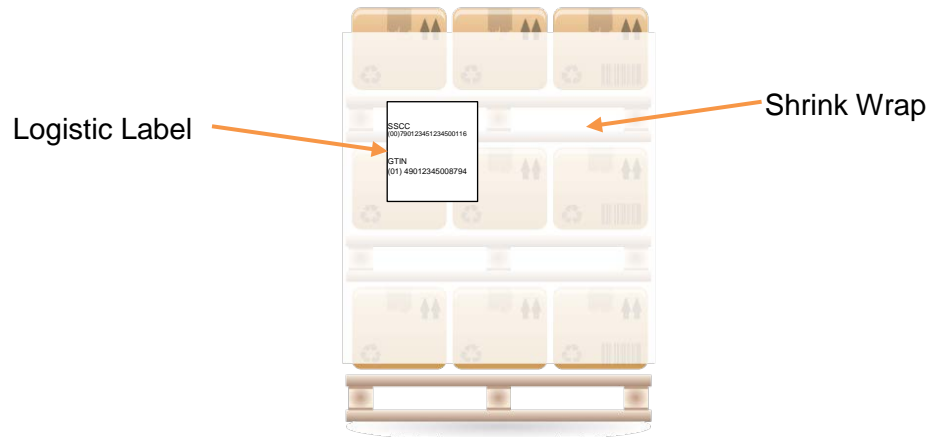
5.4.   Identifying Other Logistic Units

5.4.1.   Rolling logistic units

Such as roll-container, dolly, garment rack.

Recommendation: One SSCC.

5.4.2.   Bulk logistic units

Bulk logistic units such as containers, bags, sacks are used to transport and store unpackaged bulk products.

Recommendation: One SSCC.

5.4.3. Small logistic units (such as crates, trays, totes)

Smaller transport items are used to ship small quantities of one or more items. These logistics units include,

- Cases

- Crates

- Trays

When crates or cases are shipped as individual logistics units, each logistic unit must be identified with a unique Serial Shipping Container Code (SSCC).

Recommendation: One SSCC.

In cases where multiple logistic units are packaged for transportation, this logistics unit should be identified using an SSCC. When these multiple logistic units are shipped together but not packaged together, the grouping may also be identified using a GSIN (see Section 6.1).

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6. Transport Grouping Identification

GS1 has defined two groupings to support efficient transport management, shipments and consignments. In practice, these terms are often used as synonyms. However, the distinction has become more relevant, with shippers sharing transport capacity to optimize lead times and reduce cost (empty space) and CO_2 (carbon dioxide). See Figure 12 and Figure 13 for illustrations of the relationships between these grouping types.

Figure 12: Typical Transport Grouping Hierarchy
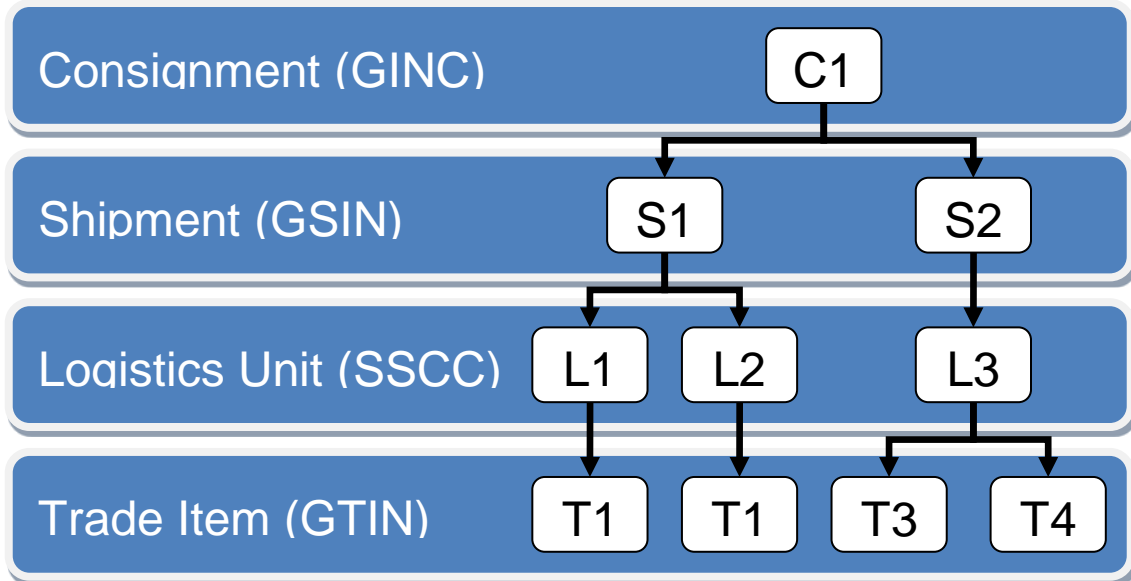
6.1. GSIN – Global Shipment Identification Number

A shipment represents the end-to-end delivery of goods between supplier and customer. It is a logical grouping of one or more logistic units, each identified with a separate SSCC, which travels under one despatch advice and/or Bill of Lading.

The Global Shipment Identification Number (GSIN) is a number that identifies a shipment and is assigned by the seller of goods.

The goods shipper collects one or more logistic units for transportation to a recipient. A GSIN is assigned to this group of logistic units to identify them as a shipment in order to:

- Identify and communicate the delivery of goods to the buyer,

- Instruct third party warehousing and transport service providers with handling and delivery instructions,

- Serve in international transactions as the Unique Consignment Reference (UCR) for import and export customs processes.

All parties involved in the transport chain can use the GSIN as a key for retrieving data related to a grouping as follows:

- The consignee or buyer – to verify if the delivery communicated with despatch advice corresponds with the purchase order.

- The transporter – to process the items according to the handling instructions.

■ The customs authorities – to retrieve the appropriate customs declarations to clear the goods for export or import.

The GSIN key is a reference in many electronic messages that contain transaction information for all parties involved in the transport chain. Therefore, the uniqueness and integrity of this key is crucial. The GSIN also fulfils the World Customs Organisation (WCO) Unique Consignment Reference (UCR) requirements. As a result, customs authorities require that the GSIN be kept unique for at least ten years.[13]

Since the shipment is linked to a commercial transaction, the GSIN must remain the same through transport from supplier to the shipper to receiver (customer). In this way, the GSIN links the purchase order and despatch advice. If a purchase order cannot be fulfilled in a single shipment, requiring several partial deliveries, then each delivery must be identified with a different GSIN.

6.2.   GINC – Global Identification Number for Consignment

This number identifies a consignment, which is a logical grouping of goods (one or more logistics units) transferred to a freight forwarder to be transported for a specific journey. The consignment number must be allocated by a freight forwarder (or a carrier acting as a freight forwarder) or a consignor, but only if prior agreement of the freight forwarder is given.[14]

The consignment level is applied when shipments are transported together for part of their journey, under a separate transport contract. An example of a consignment is a set of multiple shipments that are handed over to a freight forwarder for containerization and ocean shipment. In such cases, the consignment applies only to the ocean journey, not the final destination for each shipment. See Section 7.2, Consolidated shipments (freight forwarding), for a more thorough review of a shipment consolidation example. Similar consolidations are used in rail and road operations, with hubs where shipments are consolidated and deconsolidated.

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[13] See GSIN Rules, GS1 General Specifications, Section 4
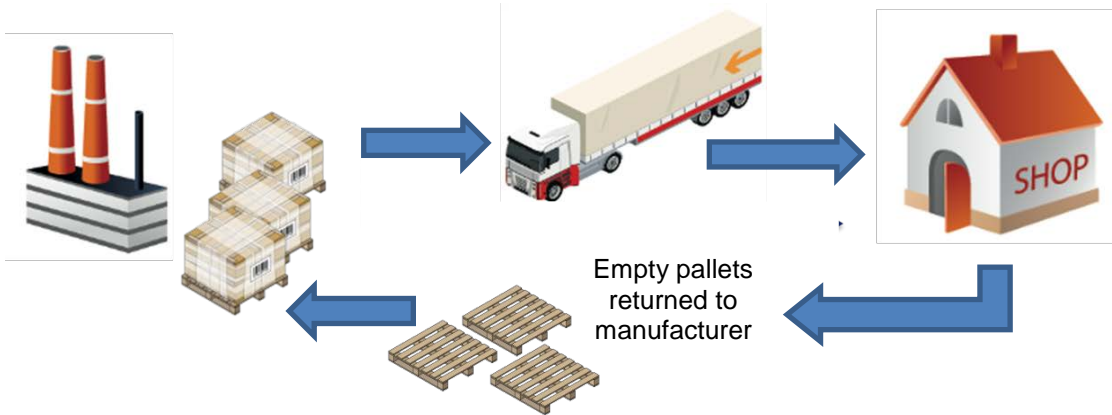[14] From GS1 General Specifications, section 3.7

Figure 13: GSIN and GINC Application
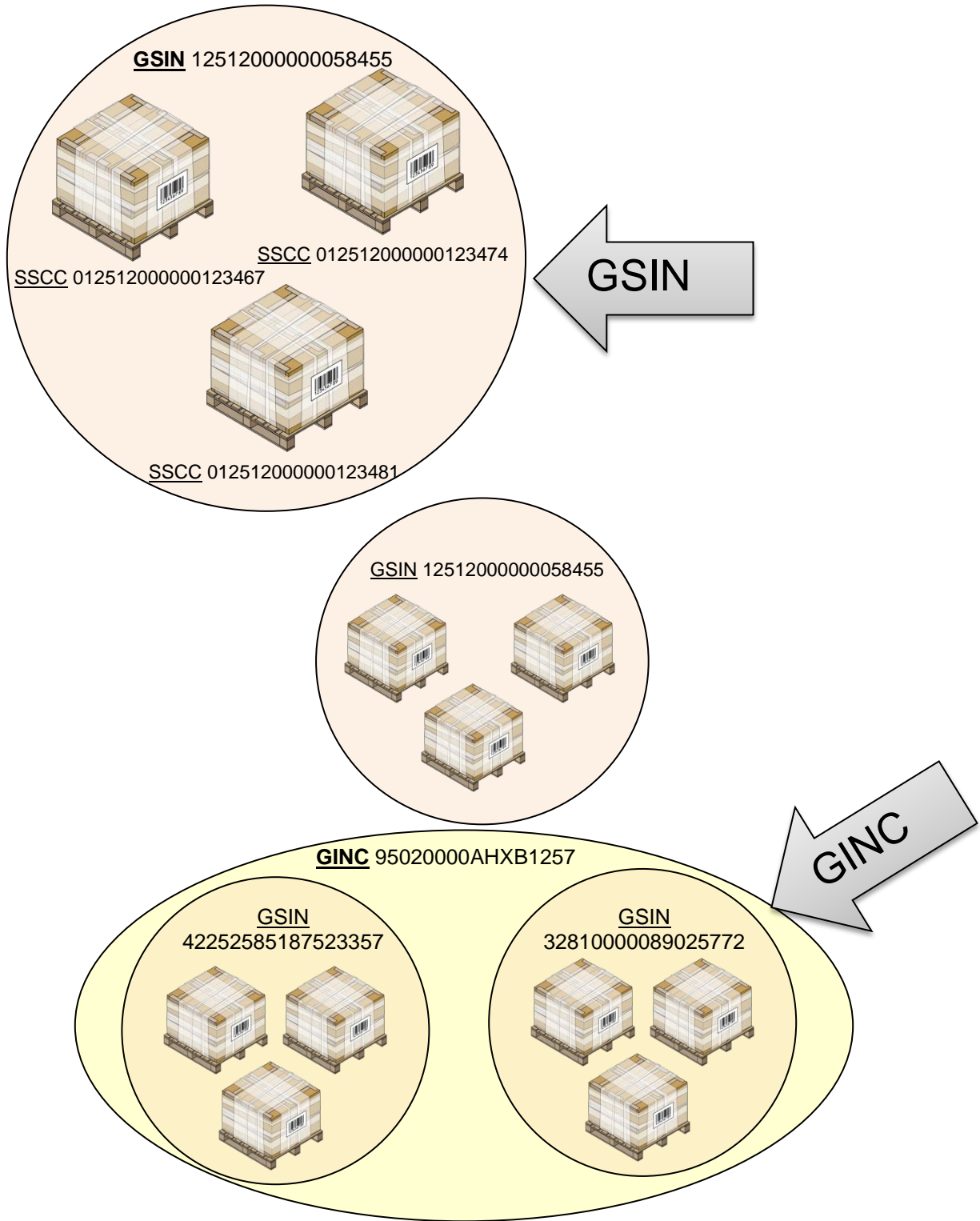
7. Scenarios

7.1. Basic shipments

Three pallets transported as one single shipment from Manufacturer to Customer.

Empty pallets returned to manufacturer

Efficient Shipping & receiving

Each individual pallet is identified with an SSCC. This label should be applied in two places to ensure it is visible.

Figure 14: Shipment label with GTIN and SSCC

The despatch advice sent by manufacturer to customer contains the SSCC(s) and related trade item information. This enables an efficient receiving process.

Transport management

The transport instruction sent by manufacturer to carrier contains the SSCCs and further information such as weight and volume to ensure adequate capacity planning.

Upon collection of the pallets by the carrier, the SSCCs are scanned to ensure the right pallets are loaded.

Asset management

The pallets are supplied by a pool operator, and have a GRAI. Upon loading the goods the manufacturer will register how many pallets have been taken by the carrier. Upon delivery the carrier may register how many pallets he delivered, and how many empty pallets he collected. Depending on the rules of the pool operator these asset movements may need to be reported.

7.2. Consolidated shipments (freight forwarding)
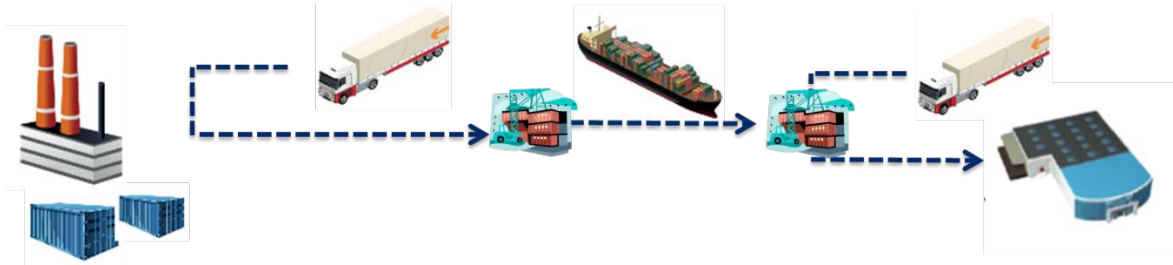
Two manufacturers have products to be delivered to customers located in an overseas city. Each manufacturer prepares these products for shipment by assembling four homogenous pallets. A unique SSCC is assigned to each pallet. See Figure 15 for an illustration of this use case.

All four pallets (logistics units) are to be shipped to the same destination, so the manufacturers assign a GSIN to the group and communicates the shipment of combined shipments consisting of multiple pallets. Each pallet is identified with an SSCC and each shipment is identified with a GSIN. A sender instructs the transporter to forward goods identified with a GSIN to a specific recipient. The transporter collects these goods along with goods from other senders and starts an optimization process. This process considers the type of goods to be transported, the requested delivery time, the required transport mode and the cost of transport. The result is a plan for transporting these shipments in the most efficient manner possible based on all of the requirements provided by the sender.

The freight forwarder delivers a container, assigns a single GINC to all shipments in container – associates GINC with the container GIAI

Container is shipped to the destination port. Port material handlers may use the GIAI to locate the container holding the shipments to facilitate loading and off-loading processes.

The freight forwarder instructs logistics provider to collect container at destination port (identified by GLN) and deliver shipments (GSIN) to customer locations (GLN). Empty container to be delivered to determined location (GLN) or filled with new shipments (GSIN).

Each shipment, identified by a GSIN (containing multiple SSCCs) is delivered to each final destination

Figure 15: GS1 identification keys in consolidated shipments
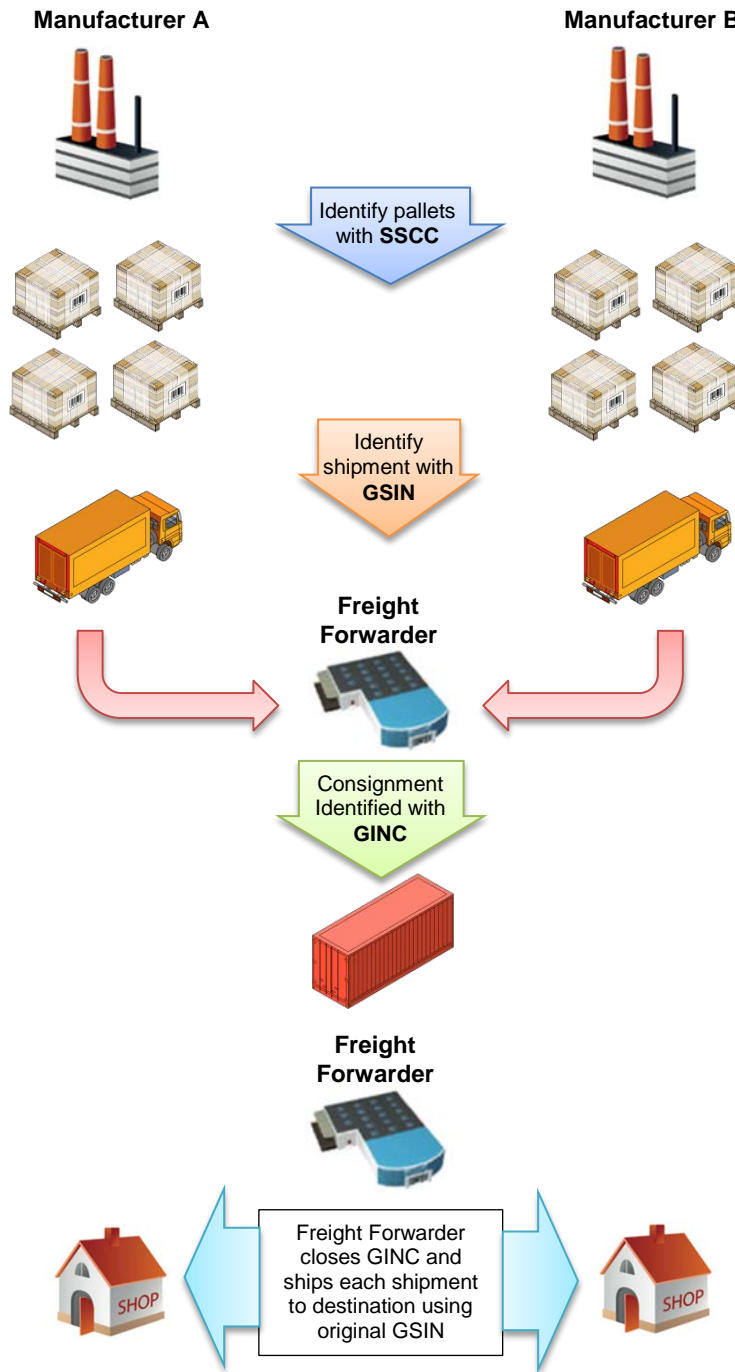
Shipping & receiving

Each individual pallet is identified with an SSCC. Each pallet gets two labels.

Transport management

Each of the shipments, consisting of multiple pallets to be delivered together get a GSIN.

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Figure 16: Shipment label with SSCC and GSIN

Asset management

Containers are supplied by the freight forwarder. Identified by GIAI

The pallets are supplied by a pool operator, and have a GRAI that may be used for reporting purposes.

7.3. Parcel shipments

Shipping & receiving

Each individual parcel is identified with an SSCC. Each parcel gets one label.

Transport management

A GSIN should not be applied since there is no shipment grouping on the shipper side. A GINC may be used for part of the journey to facilitate parcel consolidation.

8. References

■ GS1 General Specifications

http://www.gs1.org/docs/gsmp/barcodes/GS1_General_Specifications.pdf

■ GLN Allocation Rules

Global Location Number (GLN) provides the global supply chain solution for the identification of physical locations and legal entities.
http://www.gs1.org/glnrules/index.php/p=home

■ Global Data Dictionary

Repository of all data elements and terms used across all GS1 Standards

http://apps.gs1.org/GDD

- GS1 XML Transport Instruction and Response Implementation Guide

  Implementation guide that includes guidance for applying transport instructions and transport instruction response messages.
  http://www.gs1.org/docs/gsmp/GS1_XML_Transport_Instruction_and_Response_-_Implementation_Guide_i1p0.pdf

- World Customs Organization Unique Consignment Reference (UCR) Recommendation

  http://www.wcoomd.org/en/about-us/legal-instruments/recommendations/pf_recommendations/pf_tools_ucr_recomm

- GSRN Executive Summary

  Brief document outlining a more detailed overview of the GSRN and its benefits.

  http://www.gs1.org/sites/default/files/docs/idkeys/GS1_GSRN_Executive_Summary.pdf

- Logistics Interoperability Model (LIM)

  Additional guidance regarding transport & logistics processes is available in the GS1 Logistics Interoperability Model. The objective of the Logistics Interoperability Model (LIM) is to gain benefits for global supply chains by increasing the business interoperability and visibility of operations. The LIM achieves this by harmonizing the interpretation of the business processes, as well as standardizing the structure and content of the data interchanges. For more information on the Logistics Interoperability Model, visit the GS1 website:
  http://www.gs1.org/transportlogistics/forum/work_groups/lim/

- RTI (Pallet Tagging) Guideline

  http://www.gs1.org/docs/epcglobal/standards/implementation_guidelines/EPC-RTIPalletTagging-ImpGuide-i2.pdf

- Standard International Logistics Label (STILL):

  http://www.gs1.org/transportlogistics/forum/work_groups/ll/