



GS1 Model for Supply Chain Processes in Healthcare, Part I - Framework

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1. Management Summary

1.1. Background

Many market participants within the healthcare sector suffer from the lack of standardisation of business processes. They have realised that cooperation between business partners is necessary in areas such as product identification and barcoding, master data synchronisation, ordering, delivery and invoicing processes as well as logistics processes.

With rising costs in the healthcare sector, all market participants are experiencing increasing political pressure to control costs and improve efficiency, making the need for optimisation even more urgent. There is also increasing political pressure for improving quality of care and patient safety.

1.2. Harmonised and streamlined business processes in the healthcare supply chain

By using established, harmonised and streamlined business processes in the supply chain, system integration is facilitated and development costs are reduced. Moreover, electronic commerce is more rapidly adopted in a company. It also enables a quicker and easier integration of new business partners, avoiding different solutions for different clients.

Buyers, sellers and other participants save time and money when the business process, from contract to invoice, is carried out electronically and according to agreed rules. In addition, the quality of care and patient safety are improved.

This document is part of a documentation set describing a model for harmonised and streamlined business processes to be used by the participants in the healthcare supply chain. The business processes are designed to work together with other GS1 standards for the identification of products, services, parties, locations, and labelling of goods. This means that the information and product flows can be connected together to form a whole that provides traceability, visibility and safety in the business of each participant in the supply chain.

The business processes are developed and described together with the users. It is the users that drive development and ensure that the processes provide business benefits for all parties.

The documentation set describing the business process model consists of two documents. This document describes the framework of the model. The other document, "*GS1 Model for Supply Chain Management in Healthcare, Part II – eCom Processes*", describes the eCom processes of the model in detail.

1.3. Document structure

Section 2 explains the role of GS1 Healthcare and GS1 Member Organisations (MOs) within the healthcare sector in each country/region. The objective of the document is also defined, as well as the target audience.

In section 3, the main GS1 Identification Keys used in healthcare supply chain are presented. The use of these GS1 Identification Keys enables the efficiency of the flow of goods and all associated information flows to be optimised. Correct use of the GS1 Identification Keys, of the GS1 Barcodes and a proper understanding of the product packaging hierarchies leads to optimised processes within the healthcare supply chain.

Section 4 gives an overview of the healthcare supply chain and how the GS1 System of Standards can be used to achieve business benefits across the healthcare supply chain.

In section 5 the participants and roles involved in the healthcare supply chain are listed.



Section 6 outlines the electronic business processes that take place between business partners in the healthcare supply chain. The full description of the electronic business processes is given in the document *GS1 Model for Supply Chain Management in Healthcare, Part II - eCom Processes*.

Section 7 describes the different types of data that are exchanged between business partners: Master data, Transactional data and Event data. The section also describes how the data may be synchronised between business partners, in order to achieve efficient business processes.

Several other guidelines, recommendations and implementation guides are available to supplement this document. Where necessary, references to other sources are provided.

2. Introduction

2.1. Vision

GS1 Healthcare's vision is: "To lead the healthcare sector to the successful development and implementation of global standards by bringing together experts in healthcare to enhance patient safety and supply chain efficiencies".

2.2. The role of GS1 Healthcare

GS1 Healthcare¹ advocates a truly global approach in the development and implementation of global standards in Healthcare. Therefore, GS1 Healthcare strongly recommends the use of the GS1 System of Standards.

To achieve the vision of GS1 Healthcare, supply chain management needs to be improved to support current and future healthcare needs.

GS1 Healthcare brings together well known international companies, active at all stages of the supply chain. They work towards standardising and optimising the business processes in the healthcare sector to enable improved patient safety.

At the international level, GS1 Healthcare provides a networking and collaboration forum for market participants operating at all stages of the supply chain from around the world. Its working groups gather and evaluate the needs of the sector and if and where necessary, existing standards are adjusted or new standards developed in line with these needs. Regular conferences² promote the open exchange of experience and serve to disseminate information and knowledge about the standards and the benefits that can be realised.

GS1 Healthcare is governed by its members and works closely with various government agencies³ and other stakeholders and industry associations⁴ around the world. This ensures that their needs can be taken into account when developing the GS1 System of Standards and that legislation and recommendations are suitable for global use. GS1 Healthcare and GS1 are jointly seeking to cooperate with other organisations to ensure the interoperability of the GS1 System of Standards with other standards and to meet compliance with regulations.

2.3. The role of the GS1 Member Organisations

GS1 is a federation of GS1 Member Organisations (MO) located in more than 100 countries around the world. Member Organisations handle all enquiries related to the GS1 System of Standards and solutions such as GS1 identification keys, barcode technology, traceability and related services. The support is given in national languages.

The main responsibility of each MO is to assign a GS1 Company Prefix to a company or organisation at their request. The GS1 Company Prefix is used by the company to create globally unique numbers for their trade items (products or services), themselves (as a legal entity), locations, logistic units, individual company assets, returnable assets (returnable pallets, kegs, tubs), and service relationships.

An MO shall also be consulted if questions arise by a company regarding the correct use of the different GS1 Identification Keys or the right choice of data carrier e.g. barcode.

¹ GS1 Healthcare; <http://www.gs1.org/healthcare>

² Overview of the scheduled GS1 Healthcare Conferences: http://www.gs1.org/healthcare/news_events/events

³ For example: the U.S. Food and Drug Administration (FDA) or the European Commission;
<http://www.gs1.org/healthcare/about/endorsements>

⁴ For example: Eucomed, HL7 and many more; <http://www.gs1.org/healthcare/about/collaboration>

MOs provide training and support for:

- Barcodes: GS1 identification keys and barcoding
- eCom - EANCOM and GS1 XML
- Global Data Synchronisation Network (GDSN) – master data synchronisation
- EPCglobal - RFID (Radio Frequency Identification) and EPCIS

MOs also supply information on the standards and the continuing evolution of the GS1 System through the GS1 Global Standards Management Process (GSMP).

Some MOs also provide other services. For more information, please refer to [Appendix A: GS1 MO services](#).

Contact information for GS1 MOs is available at www.gs1.org/contact.

2.4. Objective of the document

This document sets out to show which processes can be supported in the healthcare sector with the GS1 System of Standards to significantly increase their efficiency through standardisation. The focus is on the logistics processes (the flow of goods, information and payments) between suppliers and care providers with the involvement of all partners (e.g. logistics service providers).

2.5. Target audience

This document is aimed at decision-makers in organisations and regulatory authorities that want to implement with their business partners the supply chain business processes in healthcare, including electronic commerce (eCom) business processes, using the GS1 System of Standards.

2.5.1. Hospitals, Manufacturers and Suppliers

In the hospital, the document is targeted at the heads of the following departments:

- Hospital management (clinical and non-clinical)
- Quality control
- Logistics, procurement, master data management, pharmacy
- IT and project managers
- Laboratories and internal services
- Financial and administrative departments

In the case of manufacturers, suppliers, wholesalers and fulfilment service providers, this document is targeted at:

- General management
- Supply Chain management
- IT and Project management
- Sales, logistics, master data management
- Packaging and labelling management

2.5.2. Supply Chain and IT Consultants, Software manufacturers and Master data data-pool operators

Service providers are expected to consider and review the GS1 Standards and methods in the concept phase of a project and evaluate them with the customer for sustainable process improvements.

- Management and process consultants
- Enterprise Resource Planning (ERP) sales representatives
- Software companies
- IT support departments
- Master data data-pools

2.5.3. Logistics service providers

Logistics service providers play an important part in the entire supply chain. They must be able to support their customers' processes. In this document, the business managers and project managers can find information about the use of the GS1 System of Standards in the healthcare sector, in particular on the processes of the upstream and downstream business partners.

2.5.4. Pharmacies and drug stores

Pharmacists will find information in this document on the application of the GS1 System of Standards in the healthcare sector. The product range of drug stores includes not only pharmaceutical and medical products, but a wide range of other products, e.g. cosmetics. These are already identified today with GS1 Identification Keys and labelled with GS1 Barcodes.

3. The role of the GS1 System of Standards in the healthcare sector

The GS1 System of Standards enables efficient and effective implementations across the supply chain. It supports a wide variety of sectors, industries and processes and is used in many areas of the healthcare sector today.

Once implemented, the GS1 System of Standards can be used with many business partners, delivering mutual process improvement benefits to the continuity of the flow of goods, financials and information. The GS1 System of Standards is replacing proprietary customer and industry solutions, enabling a standardised business process for managing multiple customers; therefore, reducing implementation costs and times are reduced and the broadening the customer base.

The GS1 System of Standards includes the following core elements which enable traceability and optimal management of the flow of goods:

- Globally unique product identification (GTIN)
- Globally unique identification of parties and locations (GLN)
- Defined product/packaging hierarchies
- Standardised data carriers, such as barcodes and RFID
- Globally unique identification of logistic units (SSCC)
- eCom: Electronic communication of master data and transactional data such as orders and despatch advice

- Event data: Registered data on where a product or service was at a certain place at a certain time and why.
- Master Data/GDSN

The globally unique identification of products reduces communication errors between business partners and allows the data capture of each product in the system. But it is not enough to identify the trade item to be ordered and delivered. The entire packaging hierarchy, from the individual product to the trading units to the logistic units must be identified with unique numbers. This allows an efficient control of inventory management processes. Standardised data carriers must be used to allow machine-readable identifications. Standardised data carriers increase system security. This makes it possible to ensure that the right information is captured at the right point in the supply chain.

At the internal hospital level, the globally unique identification of products and patients captured within appropriate barcodes is important to manage the internal flow of goods and to ensure efficient recording of care activity. The same product identification can also be used in communication with other parties, e.g. with insurance agencies.

A complete description of the use of GS1 System of Standards in Healthcare is given in [Appendix B: The GS1 System of Standards in the healthcare sector](#).

3.1. Definition of electronic messages

The various types of electronic messages are an important part of the GS1 System of Standards. These messages are used in the communication between the participants in the healthcare supply chain, e.g. between supplier and hospital or between two systems within a hospital group, as described in chapter [6 Supply chain business processes using the GS1 System of Standards](#).

The electronic messages can be categorised into the following categories:

- Master data messages (item information (partner dependent and partner independent), party information)
- Business Transaction messages (order, invoice)
- Transport and Delivery messages (despatch advice, receiving advice)
- Report and Planning messages (inventory report, sales data report)

In each electronic message, the GS1 identification keys, such as GTIN and GLN are used as references in order to avoid communication errors.

GS1 has two different standards for the electronic exchange of messages: EANCOM⁵ and GS1 XML⁶.

For a full description of the electronic business processes for healthcare supply chain, see *GS1 Model for Supply Chain Management in Healthcare, Part II – eCom Processes*.

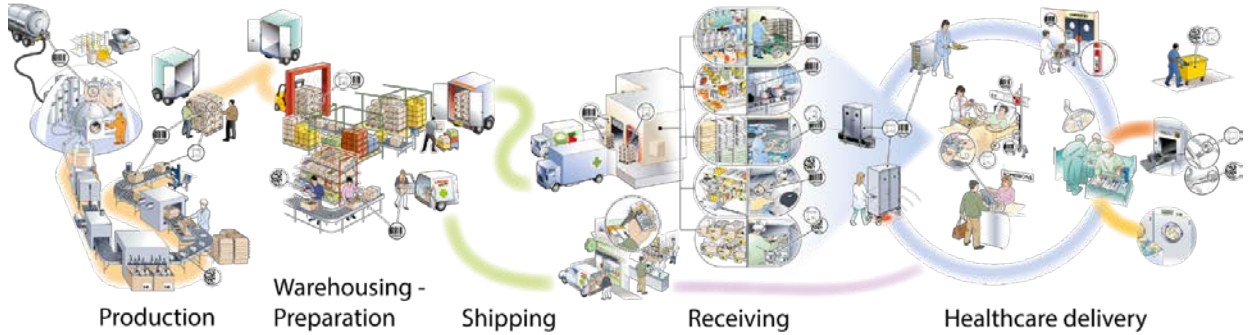
⁵ EANCOM: <http://www.gs1.org/ecom/eancom/overview>

⁶ GS1 XML: <http://www.gs1.org/ecom/xml/overview>

4. The healthcare supply chain

The figure below provides an overview of the healthcare supply chain and the major processes involved: Production, Warehousing-Preparation, Shipping, Receiving, and Healthcare delivery⁷.

Figure 4-1 Overview of the major healthcare supply chain processes



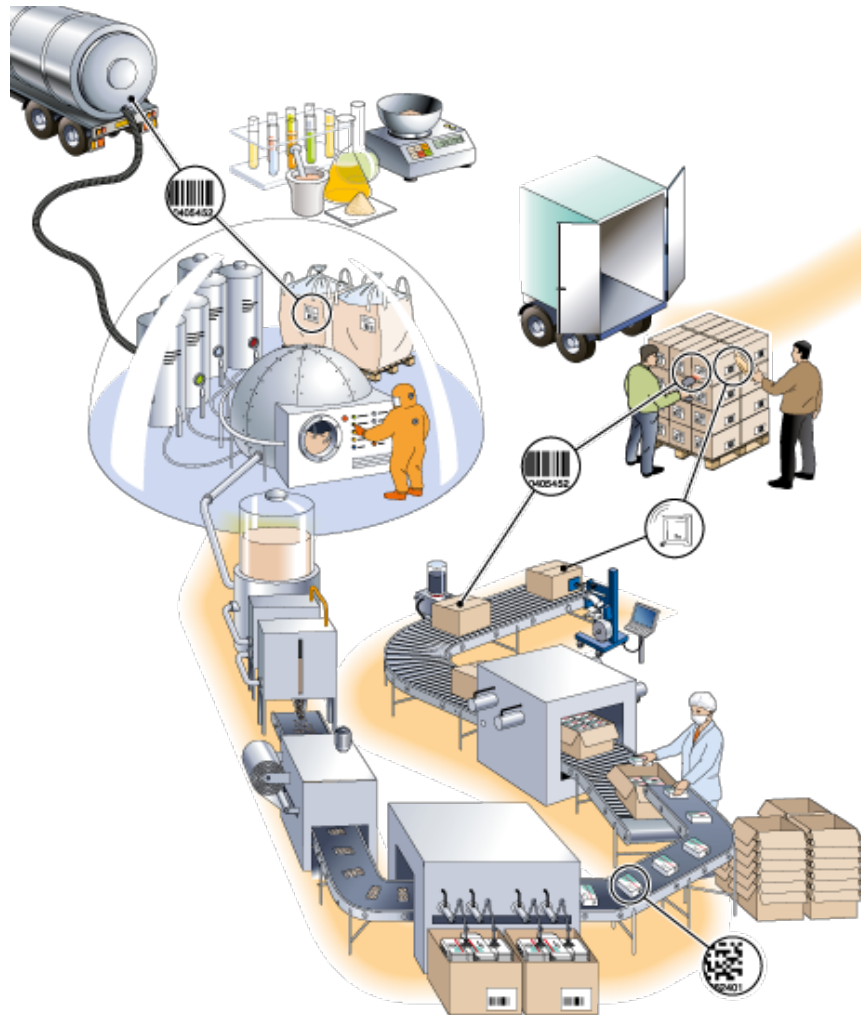
To ensure quality and safety at a high level of performance and efficiency from the manufacturer to the patient the flow of materials, products and patient data must be managed through the entire supply chain and the flow of information linked to these physical flows must be overseen. This is enabled by using the GS1 System of Standards across the healthcare supply chain.

In the following sections the processes of Figure 4-1 are described. The sections also give an overview of how the GS1 System of Standards can be used to achieve business benefits across the healthcare supply chain.

⁷ The figure and part of the contents of this chapter are taken from the brochure *GS1 Standards in Healthcare*: http://www.gs1.org/docs/patient_safety/GS1_Standards_in_Healthcare.pdf

4.1. Production

Figure 4-2 Production



The raw material is delivered to the production site and products are manufactured.

When the raw material is delivered the information from the despatch advice is used in combination with the identities of the logistic units (SSCC) to check that the right quantities have been delivered. The global trade item number (GTIN) and batch number of the raw material are read and registered.

The registered trade item numbers (GTIN) and batch numbers of the raw material are used in the manufacturing process to create traceability from the product back to the raw material.

Each packaging level of the manufactured products is assigned a global trade item number (GTIN). The products are marked with batch number and dates and the information is registered in order to achieve traceability in the next stage of the supply chain. The logistic units are marked with identities (SSCC) and this information is also registered in order to achieve traceability at logistic unit level.

4.2. Warehousing-Preparation and Shipping

Figure 4-3 Warehousing-Preparation and Shipping



Warehousing-Preparation

The products are received and stored at the warehouse. During the storage period physical inventories are carried out. Upon reception of an order from a customer the ordered products are picked and logistic units are created and made ready for shipping.

Product arrivals can be managed using the identity of the logistic units (SSCC). During storage, physical inventory can be carried out using the global trade item numbers (GTIN) and batch numbers of the products and the identities of the logistic units (SSCC). Inventory management can be optimised using batch/lot numbers.

Orders may be sent electronically. Each logistic unit created at order picking is assigned an identity (SSCC). Traceability can be achieved by connecting the SSCCs with the identity of the goods recipient (GLN), the identities of the products (GTIN) and batch/lot numbers.

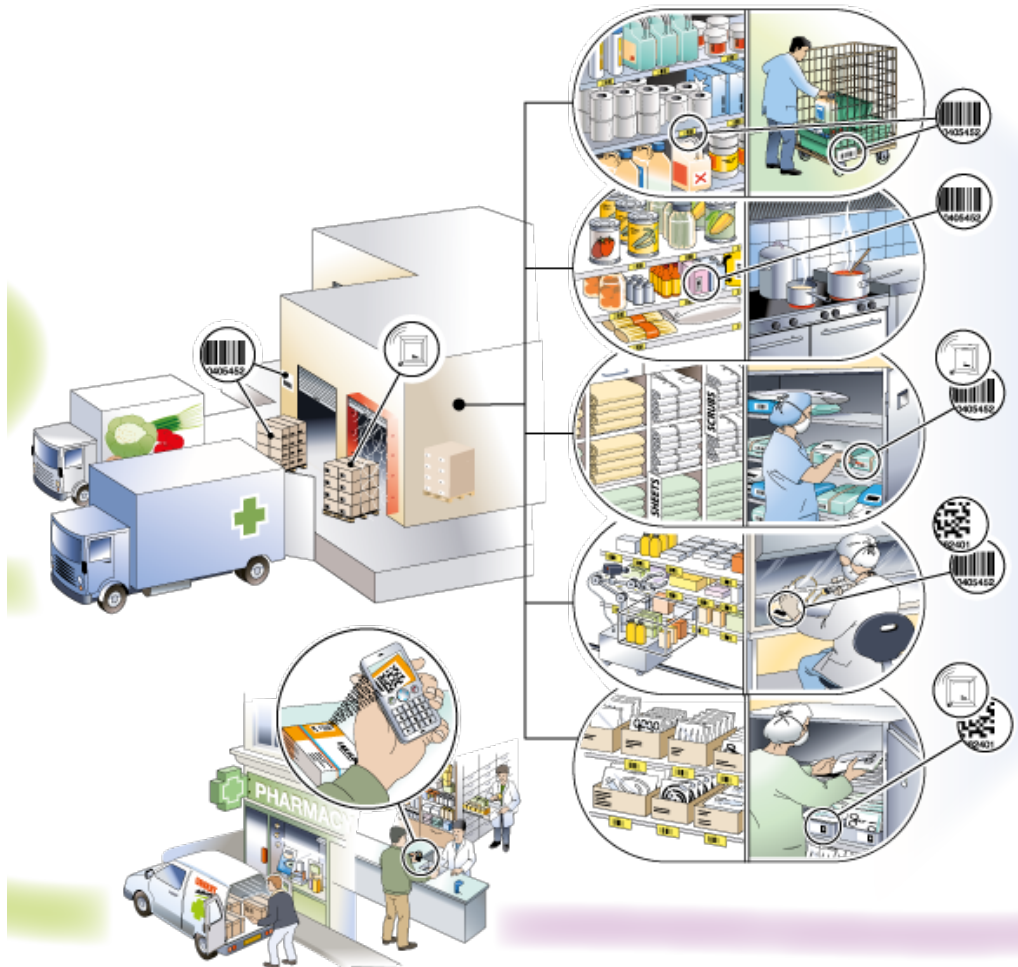
Shipping

The logistic units are loaded onto the transport vehicle. The vehicle leaves the warehouse.

When the logistic units are loaded onto the transport vehicle the identities (SSCC) are read and registered. Before the transport vehicle leaves the warehouse a despatch advice is created and sent to the goods recipient. This enables more efficient and effective delivering, goods receipt and invoicing processes.

4.3. Receiving

Figure 4-4 Receiving

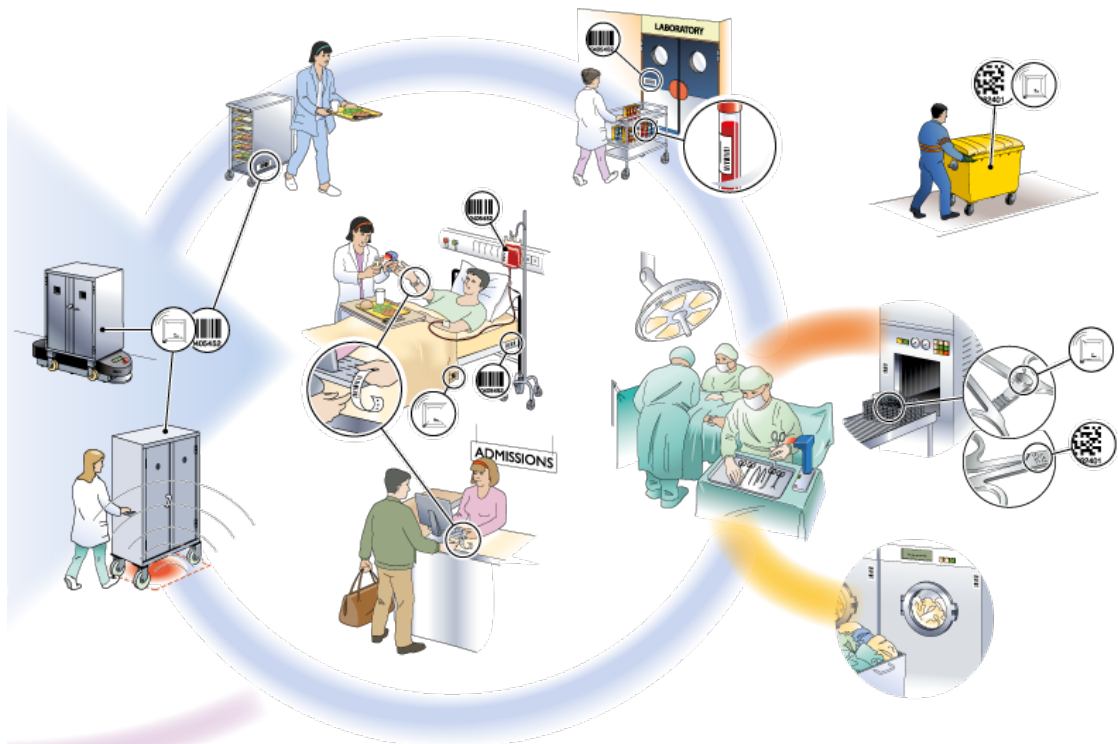


The despatch advice is received prior to the reception of goods. The goods are received and reconciled and the inventory records are updated when the transport vehicle arrives.

Planning for the reception of goods can be efficiently managed based on the despatch advice. Upon reception of the goods the identity of each received logistic unit (SSCC) is read which enables an automatic connection to the despatch advice. In this way the subsequent control and payment of the invoice can be automated through matching to the relevant order.

4.4. Healthcare delivery

Figure 4-5 Healthcare delivery



At a hospital there are many internal processes, all aiming at providing care to the patients. Examples of such processes are performing surgical operations, sterilising surgical instruments, managing waste and taking stock.

In all of the internal processes the GS1 System of Standards can be used to ensure that a patient is given the right care and the right dose of the right medicine at the right time. The internal processes are made efficient and secure by using the global trade item number (GTIN) of the products and the identities of the internal functional units (GLN). The internal processes use the same data, e.g. serial number or batch number, as was received when the goods were delivered, which creates traceability backwards through the supply chain.

Patients, and the care provided to them (e.g. surgical operations, blood transfusions, X-ray treatments and medications), are identified using a global service relation number (GSRN) which is read and registered in a database at each stage and movement of the patient, during their hospital stay. The GSRN thus contributes to the safety and traceability of the patient.

Products are identified by their global trade item number (GTIN) and lot/batch number or serial number and are recorded in the patient's medical chart or records so as to ensure the complete safety and traceability of all events that take place during the patient's stay.

Surgical equipment which is identified with GS1 numbers can be traced back to previous operations after sterilisation.

When a patient is given a blood transfusion the identity of the blood bag is linked to the identity of the donor as well as the identity of the patient receiving the blood (GSRN), creating traceability of the blood.

Assigning unique identities (GS1 numbers) to assets and equipment enables efficient stocktaking, as well as safer and more efficient maintenance and repair.

5. Participants and roles in the healthcare supply chain

This chapter provides an overview of the participants and roles in the healthcare supply chain.

5.1. Participants in the healthcare supply chain

Manufacturer

The manufacturer produces and sells products, and is responsible for providing correct product information. The manufacturer's product information should be the source of product information for all supply chain participants using the product.

The manufacturer may deliver directly to the end customer as well as to an intermediary (wholesaler, distributor, logistic service provider or the like).

Importer

The importer may work for the manufacturer, but may also be a wholesaler. In the latter case, the importer may act as the supplier's domestic contact for the end customer.

The importer may, or may not, be involved in the physical flow.

Hospital, Care institution

Hospitals and care institutions provide care to patients. The care may be provided extramural or intramural. The trade relationship between the hospital and its suppliers is based on business agreements between the business partners. The business agreement governs the choice of business process and delivery places (central warehouse, regional distribution centre, ward stock room).

Retail pharmacy, Hospital pharmacy

A retail pharmacy serves care consumers such as a patient. A retail pharmacy may act as a buyer in its trade relationship with manufacturers.

A hospital pharmacy is an organisation that supports a hospital with pharmaceuticals and pharmaceutical knowledge. The hospital pharmacy may be an integral part of the hospital, but the hospital may also procure the function of a hospital pharmacy. In that case the hospital pharmacy acts as a supplier to the hospital, which implies the need for defining the eCom interface between the business partners: the hospital and the hospital pharmacy.

Intermediary/Service Provider

The trade relationship between the supplier and the hospital is often supported by organisations that sit between the two partners and provide services for the benefit of both parties. We refer to these service providers as intermediaries.

- **Logistics service providers, Wholesalers, Other service providers**

The logistics service providers are obliged to ensure traceability of the product up to the receiver of the goods. The Serial Shipping Container Code (SSCC) is used for this purpose.

If products are correctly barcoded by the manufacturer, the logistics provider can also use the barcode of the GS1 System of Standards for the control of internal processes (receipt, storage, picking and delivery of goods). This means that it must not map the flow of goods with a proprietary system.

- **Service providers internal to the hospital**

Internal hospital departments (service providers) are also involved in the transfer of goods and exchange of information. The GS1 System of Standards is used in areas where goods are exchanged between two companies or channelled through a company. In the hospital, for example, goods are delivered from goods entry to the patient and used there. However, since goods do not only make their way to the patient via central goods entry but also through various other channels

(e.g. directly to the ward), it makes sense to use the GS1 System of Standards also at internal hospital level. Unique identifiers and data carriers help to standardise and automate processes. With the help of electronic communication between different systems within a hospital, processes can be implemented more efficiently. They are less prone to error because media discontinuities in communications can be avoided.

If the GS1 System of Standards is used from the manufacturer to the patient, logistics processes are supported, but also planning and follow-up processes such as the care activity recording and subsequent communication with service providers. At the end of the day, the optimisation of the logistics processes also increases patient safety.

- **Master data pools**

The master data pools services include the efficient exchange of product master data. The suppliers can transmit the master data to a master data pool. Thus the hospital can retrieve master data from all suppliers.

The GS1 Global Data Synchronisation Network (GDSN) is a network of interconnected and certified data pools that enable the electronic master data synchronisation (see Appendix [B.6 GS1 Global Data Synchronisation Network \(GDSN\)](#)).

- **Ordering platforms, EDI service providers, Invoice settlement service providers**

In addition to master data pools, there are also other service providers, which perform data transmission tasks. Some offer ordering platforms, via which the procurement processes can be performed. Other offer traditional EDI services: they receive the transaction data, validate them if necessary and convert them into another format and pass them on to the recipients. The third category includes service providers that offer electronic invoicing with encryption and archiving compliant to legal requirements. Of course, some service providers offer several of these services. The common point between all service providers is that they use the GS1 System of Standards in order to support the processes of business partners as intermediaries. An efficient and effective supply chain management can only be achieved if all partners use unique references (GTIN and GLN).

See Appendix C: Participants and roles in the healthcare supply chain for a comprehensive list of the participants in the healthcare supply chain.

5.2. Roles in a commercial transaction

A participant in the supply chain may have various roles in a business agreement. Some examples of roles that a participant may take on are buyer, supplier and goods recipient. The roles of a participant may vary depending on the business agreement. For every business agreement, the roles of the participants must be identified in order to enable efficient electronic communication.

See Appendix C: Participants and roles in the healthcare supply chain for a comprehensive list of the roles that each participant may take on in a business agreement.

5.3. Globally unique identification of participants and their roles

To allow electronic communication all participants require unique identification of the affiliated partners and their roles. GS1 Global Location Number (GLN) is used for this purpose; see Appendix [B.4 Globally unique identification of business partners \(GLN\)](#). This ensures that there will be no confusion and goods and electronic messages are delivered to the correct recipient.

6. Supply chain business processes using the GS1 System of Standards

This chapter describes the electronic business processes that can be used to optimise the healthcare supply chain.

The basis for these electronic business processes is the use of the GS1 System of Standards and the principle of synchronising all data - master data as well as transactional data (see chapter [7 Data sharing](#)). By synchronising data, the systems of the respective business partners keep identical information on prices, partners, deliveries etc., at all times.

The following sections describe the Order to cash electronic business process used within Healthcare. Other business processes, such as Vendor Managed Inventory (VMI) and Consignment, will be dealt with in phase two of the eCom healthcare harmonisation project.

6.1. Order to cash

Order to cash comprises all activities from ordering and delivery to invoicing and finally payment. The process is suitable stock items with a high turnover / a high number of transactions, such as latex gloves and dressing materials. Products with a low turnover, such as hip implants, are often managed by a Vendor Managed Inventory (phase two).

6.1.1. Business benefits

Some of the most important benefits that can be achieved by using Order to cash are:

- Increased patient safety
- Traceability of products
- Increased loyalty to the business agreement
- Increased price awareness
- Pre-accounting at order entry
- Automatic invoice matching
- Increased economic control of purchasing
- Improved statistics and monitoring
- Improved basis for new procurements

Order to cash helps business partners to comply with their business agreement

Both supplier and buyer invest time and resources in the procurement process before signing a business agreement. It is therefore important that both parties abide by the agreed terms. By using an Order to cash process, where all products and prices are known and purchasers are only giving the possibility to order from this assortment, purchases outside the contract are avoided.

All information, such as prices, product assortment and delivery times, are in the buyer's system and it is easy to order from the contracted suppliers. This means for example that the nurse who places orders can focus more on core activities, such as nursing, elderly care and other healthcare activities, rather than spending time on administrative tasks.

Order to cash improves information quality

When the buyer and the supplier sign a business agreement, it is important to agree not only on products and prices, but also transport charges, delivery locations and order terms. Using the Order to cash process helps both parties to comply with the terms of the business agreement and avoid disagreement.

Invoices are easily reconciled

By following the Order to cash process, the business partners should always have the same up-to-date information in their systems. This means that the buyer can be sure of ordering the right products with the right quantity at the right price and have them delivered to the right place at the right time. Since all the information is already in the systems, invoices can be reconciled automatically against the agreement and prices, ordered and delivered goods and the supplier can be sure to get the right payment at the right time.

Order to cash provides traceability

The information needed to trace an item, one-up, one-down, should be in an Order to cash system. Enabling regulatory compliance, targeted recalls and/or inventory management of, for example short shelf life items.

6.1.2. Preconditions

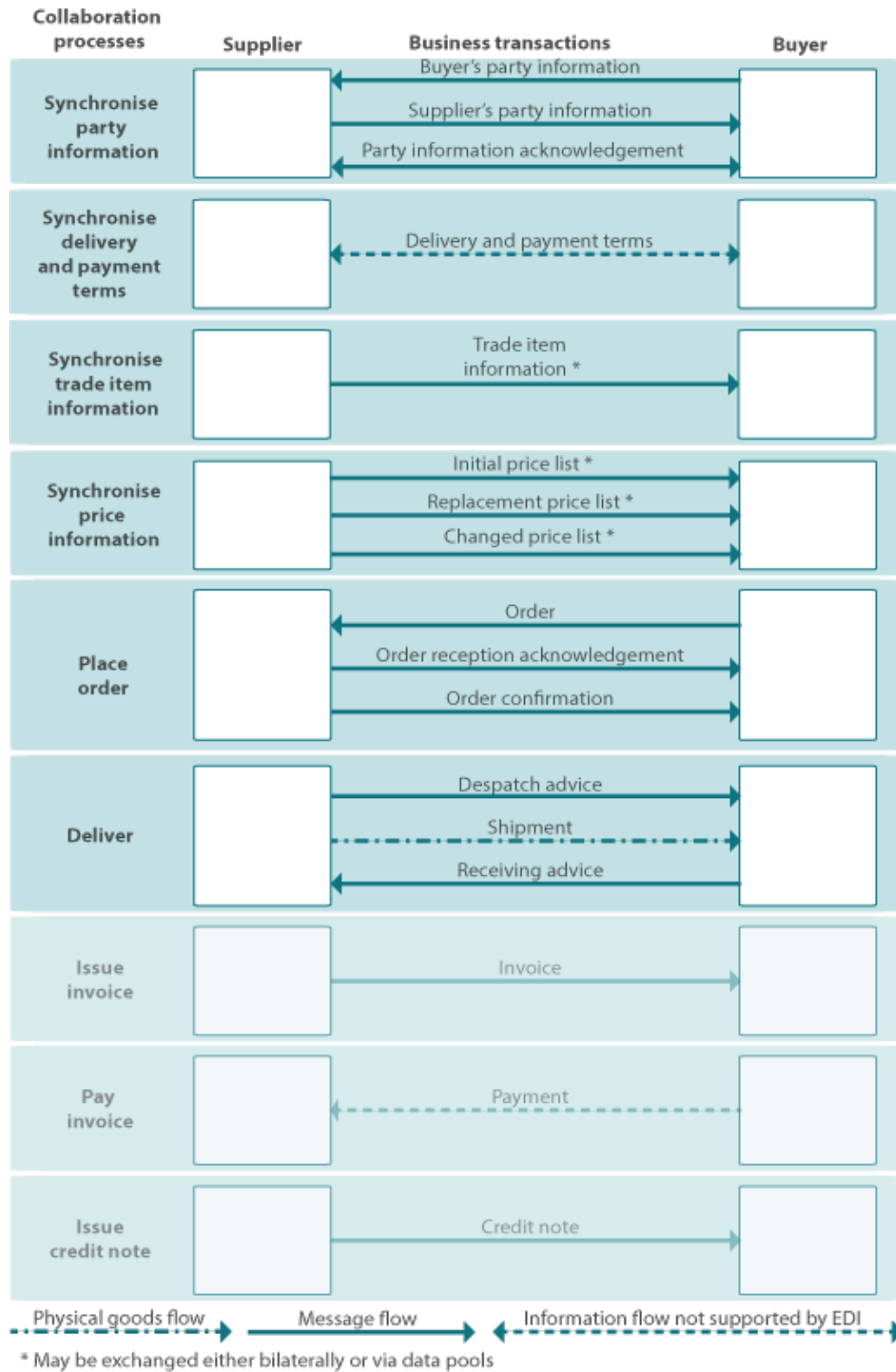
In order to start using Order to cash the business partners need to agree on business requirements such as prices, assortments, transport charges, delivery locations and order terms, and synchronise their systems with this data. It is essential that the data is synchronised during the entire period of the business agreement.

6.1.3. The Order to cash process

This section briefly describes the Order to cash process and the business transactions used in the process. A detailed description of the process is provided in the document *GS1 Model for Supply Chain Management in Healthcare, Part II - eCom Processes*.

The figure below shows the business transactions that are exchanged between the supplier and the buyer during the Order to cash business process.

Figure 6-1 Order to cash business process (greyish sections to be addressed in phase two)



The process starts with the parties exchanging master data: party information, delivery and payment terms, trade item information, and price information.

An ordering and invoicing pre-condition for both parties involved is to have identical, correct and up to date master data.

Prices and trade item information, together with other master data, is used as a basis when the buyer creates an order. The supplier can respond with an order reception acknowledgement to acknowledge receipt of the order, or with an order confirmation to confirm that the supplier accepts the order. If the supplier cannot deliver the ordered items, an order confirmation with changes must be sent.

When the ordered items have been picked and are ready for shipment the supplier can send a despatch advice to the buyer. This specifies exactly which items are being sent and contains information such as the items' expiry date, serial number and batch number. After receiving the goods the buyer can send the supplier a receiving advice if the parties have agreed on such arrangement.

When the goods have been delivered the supplier sends an invoice to the buyer. In order to carry out invoice reconciliation automatically, all content must be linked back to master data, order, order reception acknowledgement, order confirmation, and despatch advice.

The process ends with the buyer paying the invoice. If there were errors in the invoice, these can be corrected with a credit note. (The invoicing process will be addressed during phase two of the eCom Healthcare Harmonisation project).

6.2. Other business processes

Other business processes, such as Vendor Managed Inventory (VMI) and Consignment, will be dealt with in phase two of the eCom healthcare harmonisation project.

7. Data sharing

Synchronisation of data between business partners is a prerequisite for efficient electronic business processes and safe care processes, since it enables the systems of the respective business partners to keep identical information on prices, partners, deliveries etc., at all times.

Unfortunately, the data is rarely exchanged in a structured way in the healthcare supply chain. Since hospitals do not receive the needed data, they gather it on their own, which is a painstaking, work intensive and error-prone process. Data is very often out of date which results in wrong products ordered, incorrect invoices and errors in the care processes which in the end affects patient safety and increases costs. With inconsistent, inaccurate and outdated product information it is nearly impossible for hospitals to conduct effective supply chain analyses.

Data synchronisation brings consistency to master data for those parties who exchange it, reducing errors and increasing efficiency.

Data can be categorised into different sub-categories: Master Data, Transactional Data and Event Data.

- Master data contains product and party/location data which rarely changes (product measurements, names and addresses, etc.)
- Transactional data contains information required to complete a business transaction such as Purchase Order.
- Event data enables the access to secure information about movements of goods in transit, which provides visibility and improves businesses processes.

7.1. Master Data

Master data is data that is applicable across multiple business transactions. Master data describes each item or party involved in supply chain processes.

Master data can be categorised into two sub-categories:

- **Partner dependent master data**, which is specific to a partner relationship, such as agreed prices, payment terms, quantity discounts and agreed delivery locations. Partner dependent master data is part of the purchase conditions agreed bilaterally by the business parties.
- **Partner independent master data**, which is not specific to a partner relationship, such as logistical and clinical information on a product.
 - General partner independent master data covers logistical data primarily on the orderable units, such as the number of products per unit or the weight and dimensions of a product. This information is used by the logistic providers and wholesalers, as well as in materials management in the hospital for storage and ordering processes.
 - There is also specific partner independent master data, such as exact descriptions of products, e.g. clinical information or images. This information needs to be made available electronically to employees of pharmacies and hospitals through their IT Systems.
 - Party information including delivery addresses is also regarded as partner independent data.

All master data, both partner independent and partner dependent data, must be synchronised properly by the supplier as well as the buyer, so that the correct package for a product is ordered, goods are delivered to correct addresses and the issued invoice for a specific delivery is correct including agreed prices. It also allows reliable analyses to be done for strategic purchasing.

7.1.1. Electronic synchronisation of master data

A precondition for the synchronisation of master data is that both parties have a Product Information Management System.

GS1 defines two ways by which master data should be synchronised:

- Synchronisation of master data via globally networked databases
- Synchronisation of master data via bilateral communication channels

7.1.1.1. Product Information Management System (PIM)

To be able to efficiently exchange master data, suppliers and hospital need to have IT systems, where they can store product and partner information.

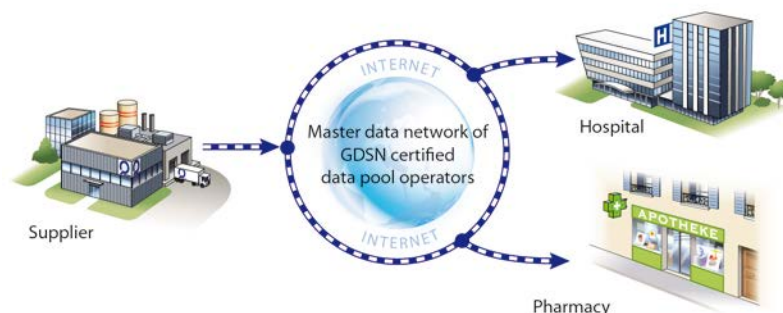
At the supplier, master data can be stored in several different departments: R&D, Finance, Logistics, Marketing, etc. It is recommended that the supplier put processes into place to gather all this information into a Product Information Management System (PIM). Data needs to be imported, complemented, verified and approved. If all data is available in a PIM, the setup of an interface (Master Data Connector) to deliver data to hospitals, governments or a web shop is very easy.

Hospitals on the other side, need a PIM to receive, verify, complement and approve the data. From this PIM, data can be distributed to all the relevant systems within the hospital. Please note that not all IT systems need all types of data.

7.1.1.2. Synchronisation of master data via globally networked databases

Manufacturers may store their product master data in a standardised and certified master data network, e.g. a GS1 GDSN data pool (see Appendix [B.6 GS1 Global Data Synchronisation Network \(GDSN\)](#)). There, the master data are available to customers (for example, hospitals and retail pharmacies). In doing so, a one-to-many (1:N) relationship arises for each business relationship: the manufacturer provides its data once and all its clients can retrieve the data from the network. This considerably simplifies the master data synchronisation between manufacturers and care providers.

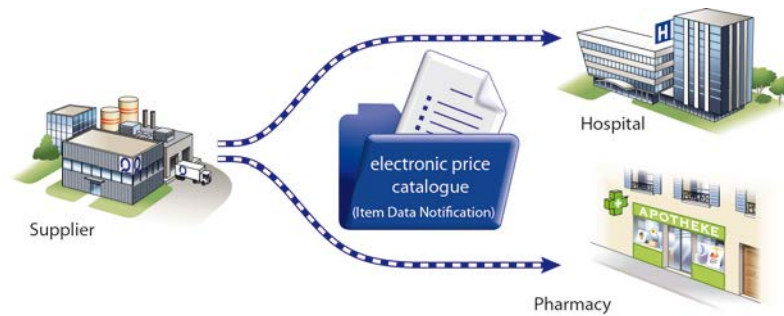
Figure 7-1 Synchronisation of master data via interconnected databases



7.1.1.3. Synchronisation of master data via defined (bilateral) communication channels

Other suppliers choose a direct path for the synchronisation of master data. In addition to the physical delivery of price lists and catalogues, master data can also be transmitted via standardised electronic messages (e.g. Item Data Notification). This message is suitable for bulk migrations, e.g. price changes by government decisions to reduce prices or for the inclusion of seasonal assortments. The synchronisation of master data takes place 1:1, which means that each client must be informed individually about the changes to master data.

Figure 7-2 Synchronisation of master data via bilateral interfaces



7.2. Transactional Data

Transactional data is data that acknowledges the completion of a business transaction such as the data included in the order in an ordering process.

The quantity of an ordered product, batch numbers or serial numbers are examples of transactional data. Transactional data are included in transactional messages such as orders, despatch advices and invoices. Transactional data should precede, accompany or follow the flow of goods.

Transactional data such as batch/lot numbers and /or serial numbers in a despatch advice enables tracking and tracing of products throughout the supply chain. Serial numbers also allow for verification of authenticity of delivered products, such as pharmaceuticals.

Transactional data is synchronised between the business partners by communicating business documents, such as an order.

7.3. Event Data

Most companies and organisations need to know exactly where a product or service is located at a specific time and why it is there. This is called visibility.

Visibility means knowing where things are now, why they are there, and where they were before. It is a capability that allows a company or organisation to make informed decisions based on accurate information about the actual conditions of its supply chain at any moment in time. This data is then used to enhance business intelligence and facilitate decision-making.

Visibility is achieved by gathering event data. Event data is information on why a product or service was at a certain place at a certain time.

Event data is necessary for traceability. Using event data leads to increased safety, security and efficiency of pharmaceutical supply chains.

By capturing and sharing event data the chain of ownership or chain of custody can be demonstrated, which can assist in identifying counterfeit products as they enter the supply chain.

Event data is registered in EPCIS (Electronic Product Code Information Services), which enables tracking of products and services through the entire supply chain.

For more information on EPCIS, see <http://www.gs1.org/gsm/kc/epcglobal/epcis>.

Appendix A: GS1 MO services

Examples of services which may be provided by individual GS1 MOs:

- Barcode verification: checking the content, quality and readability of barcodes.
- Data pool: storing and distributing trade item information.
- Validation: validation of trade item information.
- Data pool: storing and distributing information about parties and locations.
- Training: training in the GS1 System of Standards and solutions. Courses can cover various aspects of the GS1 System: barcodes and identification, electronic communication, master data alignment, traceability, GS1 Healthcare supply chain, and RFID technology.
- National needs: If the existing standards do not support national needs, these can be introduced internationally by an MO. MOs represent the interests of national members in the Global Standards Management Process (GSMP⁸).
- Consulting services: MOs can offer support in the implementation of the GS1 System and solutions.

⁸ GSMP: www.gs1.org/gsmg

Appendix B: The GS1 System of Standards in the healthcare sector

The elements of the GS1 System of Standards are described in this appendix.

B.1. GS1 Company Prefix (GCP) – the prerequisite of globally unique identification

A GS1 Company Prefix (GCP) is the prerequisite of globally unique identifications of partners, products and logistic units. All GS1 identification Keys are created based on the GS1 Company Prefix. The GS1 Company Prefix is allocated by the relevant GS1 country organisation to its members.

The GS1 Company Prefixes all have the same structure:

- GS1 Country Prefix: The first digits identify the GS1 Member Organisation which has issued the number.
- Company Reference: The next digits identify the company that has been assigned the GS1 Company Prefix.
- The GS1 country prefix and the company reference are variable in length. Therefore, all GS1 Identification Keys must always be considered as a whole and should not be interpreted as a significant number. For more information, please contact your local GS1 Member Organisation.⁹

B.2. Globally unique identification of products (GTIN)

With the Global Trade Item Number (GTIN), GS1 offers a globally unique identification key for products. With the GTIN, the manufacturer has the possibility of defining globally unique trade items that can be used with all customers. The participants in the supply chain can be certain that there are no duplicates in their systems. The administrative burden is significantly reduced for all participants involved.

There is also a serialised form of a GTIN called serialised GTIN. A serialised GTIN identifies the specific instance of a trade item. For example, serialised GTINs are used in the healthcare sector to distinguish individual implants which are of the same brand and characteristics

GS1 healthcare members have defined the rules for the allocation of GTINs to products. The result is the *GTIN Allocation Rules for Healthcare*¹⁰. These are available in various languages and consider the different product groups in the healthcare sector.

B.2.1. Packaging hierarchies

When goods are traded between two partners, various packaging levels are involved, depending on the type of product:

- Primary packaging (e.g. blisters with tablets/syringes in sterile packaging)
- Secondary packaging (e.g. box of two blisters/with 10 packed syringes)
- Multipacks (e.g. 7 boxes)
- Box (e.g. 3 multipacks)
- Pallet (e.g. 24 boxes)

⁹ Addresses of all GS1 Member Organisations: <http://www.gs1.org/contact>

¹⁰ GTIN Allocation Rules for Healthcare: <http://www.gs1.org/1/gtinrules/index.php/p=static/t=healthcare>

Figure B-1 Example of two products and their respective packaging hierarchy levels



Some products, for example implants, may have only one packaging level.

The large number of packaging layers is specific to the healthcare system. Other sectors usually have three levels.

To ensure efficient process management, it is important that all levels of the packaging hierarchy are identified with a GTIN. It is necessary to unambiguously define the ordering units and the delivery units and the units which are to be invoiced.

For inventory management, it is essential that the different levels of the packaging hierarchy are known in the system and that conversion factors or minimum stock levels can be defined.

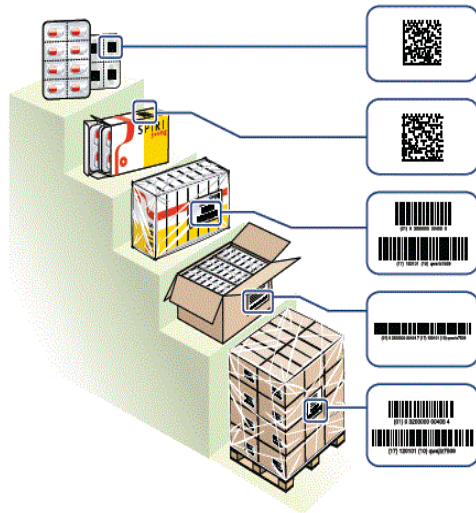
B.2.2. Standardised data carriers

Depending on its application and corresponding requirements, the GS1 System of Standards features various types of machine-readable carriers (barcodes and EPC/RFID) into which the GTIN can be encoded, providing the flexibility to select the right carrier for the situation, product and environment, for example, using a GS1 DataMatrix on a blister.

Depending on the process, in addition to the GTIN, other data can be added to the barcode: e.g. expiry date, batch number and/or a serial number. The members of the healthcare sector have together developed a recommendation as to which products should be provided with which information at what level of the packaging hierarchy – the *AIDC Healthcare Implementation Guide*¹¹.

¹¹ AIDC Healthcare Implementation Guide (GS1 Global Office, 2010)

Figure B-2 Packaging hierarchy levels with possible GS1 barcodes



The illustration shows how the Application Identifier Standard¹² can be used to create GS1 Barcode symbologies (e.g. GS1-128 or GS1 DataMatrix) with extended information.

B.3. Globally unique identification of logistic units (SSCC)

Logistic units are items made up for transport, storage and distribution purposes. The figure below shows some examples of logistic units.

Figure B-3 Two examples of logistic units



Using the Serial Shipping Container Code (SSCC) allows users to identify logistic units uniquely so that they can be tracked and traced throughout the supply chain. With the SSCC, the GS1 System of Standards offers a globally unique identification number for logistic units. Each logistic unit that leaves a company can be identified with this unique number.

The SSCC is captured in a barcode or an EPC/RFID tag on the logistic label and is an unambiguous reference to a despatch advice, which may include one or more line items. Each line item references the same GTIN and if the expiry date is relevant, each line item references the same batch/lot number.

Each trading partner must capture which SSCC was sent or received by which customer. This ensures product traceability.

¹² Application Identifier Standard: http://www.gs1.org/barcodes/technical/application_identifiers

The combination of SSCC and electronic data exchange significantly reduces the cost of goods entry at the recipient. The SSCC is transmitted electronically to the trading partner as a reference number with all relevant information about the logistic unit. Upon receipt of the goods, the SSCC barcode or EPC/RFID tag on the logistic label on the logistic unit is scanned. The information obtained is captured and can subsequently be consulted in the ERP system. The goods received can be entered into the system after a visual check. Manual recording of goods upon goods entry is no longer necessary.

B.3.1. Logistic label

The aim of the Standard International Logistic Label (STILL)¹³ is to drive common approach to the identification of logistics units and barcoding used on Transport and Logistic Labels. Reading the SSCC barcode on each logistic label of each logistic unit allows the physical movement of logistic units to be matched with the electronic business messages (e.g. despatch advice) that relate to them. This provides the link between the physical goods flow and the electronic information flow.

Extra information, known as attribute data, such as batch/lot number, best before date, and the identification of trade items contained in a logistic unit can also be shown on the logistic label.

B.4. Globally unique identification of business partners (GLN)

With the Global Location Number (GLN), the GS1 System of Standards offers a worldwide unique number for the identification of physical locations, organisational units and roles. The GLN is therefore used for two different purposes. For both needs, the master data of each GLN must be communicated in advance. Global Location Numbers are a prerequisite for the use of GS1 eCom messages and the Global Data Synchronization Network (GDSN).

B.4.1. Identification of physical locations

When communicating with a trading partner, the physical locations that are relevant for the trading relationship (flow of goods) must be defined. This can be, for example locations such as goods receiving/Goods In, operating room or a ward dispensary in the hospital. For each of these locations, a GLN is defined, which must be used in communication with the partner. For example, it is defined in an order and delivery message which GLN (e.g. goods receipt ramp 2 of the central warehouse) will receive the products.

For supply chain management within a hospital, it is important that all stock locations (central warehouse, ward stockroom, pharmacies, etc.) can be identified with a GLN. In this way, the internal goods flow can be captured properly. It also enables the supplier to pick and deliver goods to each individual department.

B.4.2. Identification of organisational units

To allow electronic communication, organisational units (e.g., supplier A, hospital B, insurance agency C) must be identified. In the electronic messages, such as order and despatch advice, these GLNs are used for addressing messages. In this scenario, the GLN identifies a legal or organisational unit or even an electronic mailbox that does not exist physically.

GS1 Healthcare members have developed a recommendation on how to allocate the GLN: *GLN in Healthcare Implementation Guide*¹⁴.

¹³ GS1 logistics label: http://www.gs1.org/sites/default/files/docs/transportlogistics/GS1_Logistic_Label_Guideline.pdf

¹⁴ GLN in Healthcare Implementation Guide (GS1 Global Office, 2010)

B.5. Globally unique identification of care giver and subject of care (GSRN)

The Global Service Relationship Number (GSRN) provides a globally unique identification number used to identify the relationship between a care giver and the subject of care, such as between nurses and patients. In principle, the GS1 System of Standards does not identify a person but a medical case (a person in a particular role, e.g. doctor/nurse or patient, with a particular relationship (illness) to an organisation (such as a hospital)). Thereby avoiding the need to identify individuals by name.

Upon admission to a hospital, the patient is assigned a GSRN as the identification of its subject of care role, which they keep for the stay in the hospital. The GSRN is used, for example, to record care activities in their (electronic) file. A patient's file always remains uniquely identified, even if the patient in question is transferred from one hospital to another.

GSRN in combination with an instance number, the Service Relation Instance Number (SRIN), is used to identify each care activity given to a patient, such as a medication administration at a certain time. This leads to improved control and traceability in the health care processes.

All health professionals can be identified in their care giver role with a GSRN so that automated data capture can take place in care processes.

B.6. GS1 Global Data Synchronisation Network (GDSN)

The GS1 Global Data Synchronisation Network (GDSN)¹⁵ enables the availability of accurate and consistent data, accessible in a secure way for all business partners across the Healthcare sector. This global platform allows suppliers to efficiently and effectively share product data with their business partners.

The GDSN is a network of interconnected and certified data pools that enable the electronic master data synchronisation. A manufacturer can therefore upload its master data to its preferred master data pool. The customer then has the opportunity to draw the data from its preferred master data pool.

The advantage is obvious: master data are available from one single source and potential adjustments to the master data are immediately available to all customers. Since both manufacturers and customers have the same master data in their systems, errors in the subsequent processes are minimised.

B.7. Definition of electronic messages of other organisations

GS1 works very closely with other healthcare organisations. The intention is that the data from the procurement process can also be used for the clinic's internal processes.

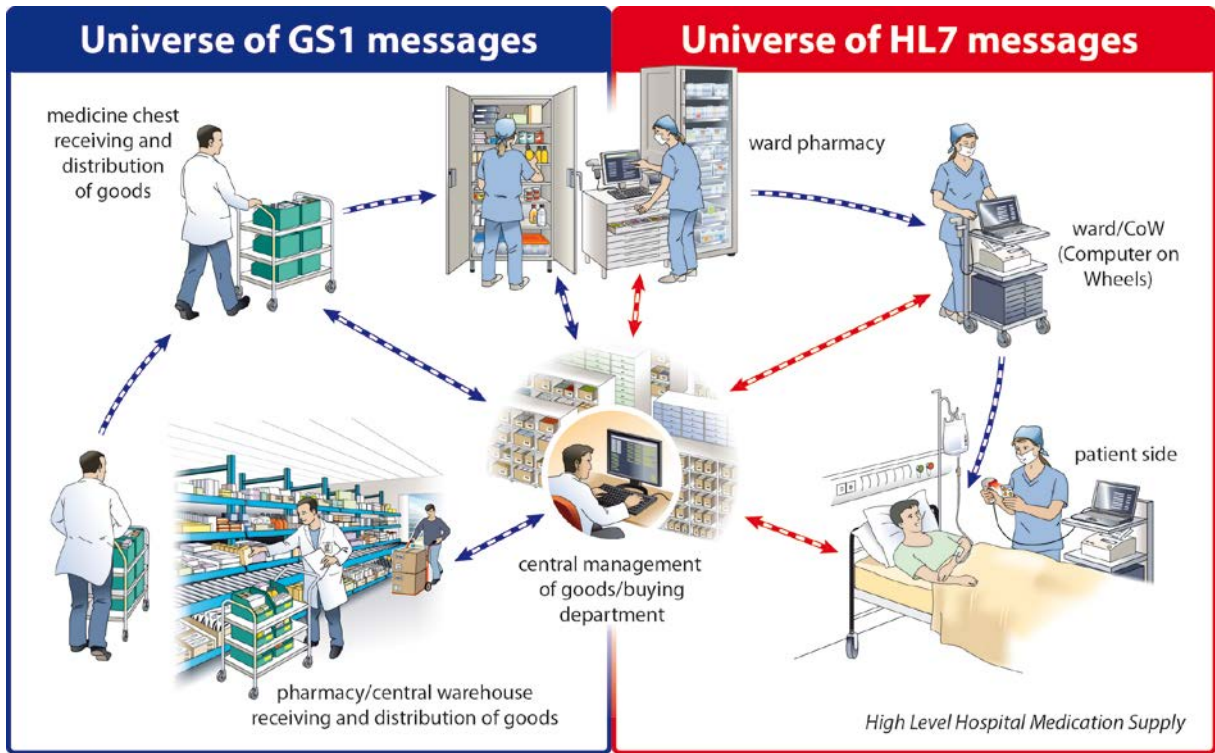
We will refer to HL7 messages, when it comes to ensuring the traceability of products from the supplier to the patient.

Further information on cooperation between GS1 and HL7 can be found in the Memorandum of Understanding¹⁶.

¹⁵ Global Data Synchronisation Network (GDSN): <http://www.gs1.org/gdsn>

¹⁶ GS1 and HL7 Join Forces to Develop Global Standards to Improve Patient Care (GS1 Global Office and HL7, 2007)

Figure B-4 Delimitation of the use of GS1 and HL7 messages



Appendix C: Participants and roles in the healthcare supply chain

This Appendix describes a comprehensive, though not exhaustive list of Roles and Actors in the Healthcare Supply Chain, together with identified definitions, synonyms and additional roles.

While considerable effort has been made to provide in-document definitions, it may be possible that certain terms have definitions outside this document.

This Appendix contains glossaries, containing the terms being used in the Healthcare Context for Order to Cash for Roles and Actors.

The glossary tables are constructed as follows:

Column in table	Description of content of column
Role/Actor	The term for a role or actor in the Healthcare Supply Chain as identified by this work group.
Definition	Describes the role or actor
Source	Where the role or actor information was retrieved from. This work group has based itself upon different sources: EANCOM GS1 XML GS1 Global Traceability Standard for Healthcare (GTSH) GS1 Glossary Where no definition was available from these sources, the Work Group has sourced a definition from available sources on the Internet or dictionaries. Where more than one definition was available, the different definitions are listed one below the other, separated by a dotted line.
Guidance	The use of this term as identified by this Work Group. Wherever required, the Work group has provided other terms that should be looked at for a correct understanding. This is in the form of "See: <term>".
Synonyms	The Work Group has listed - where applicable - other terms that can be used as synonyms for the given term. If these synonyms are in blue and underlined, they contain a hyperlink to the other term and its definition.
Can Perform Following Roles	Actors/roles can perform different roles within the Healthcare process Order to Cash. These roles are listed in this column. If the roles are in blue and underlined, they contain a hyperlink to the term in question and its definition.

Glossary of terms 1

Sources are referenced in Sources and References below.

Actor/role	Definition	Source	Guidance	Synonyms	Can perform following Roles
Buyer	Party to whom merchandise and/or service is sold.	<i>EANCOM</i>	IE/SE: Very generic term which can be broken down in other terms.	Purchased by	
	Party to which goods or services are sold.	<i>XML</i>			
Care Provider	An organisation or facility that delivers healthcare to a Subject of Care. Corresponds to “Care Delivery Organisation”, “Healthcare Organisation”, Healthcare provider	<i>XML</i>	<p>Ireland: Could also be a clinician, not necessarily an institution</p> <p>Not in EANCOM + XML -> used in HL7 messaging.</p> <p>Care provider is a type of buyer/shipto/billto, but they exist as a separate entity. (put as such in diagram)</p> <p>e.g. Clinic, e.g. Day hospital, e.g. Department (generic term)</p>	institutional provider (GTSH), dispenser (GTSH), Healthcare provider	Buyer ShipTo BillTo Invoicee
Consumer	A person who purchases goods and services for personal use.	<i>This Work Group</i>	Please refer to the synonyms rather than this term, because it is very generic.	Patient , Subject Of Care Healthcare Provider In-Patient	
Department	A division of a large organization dealing with a specific area of activity.	<i>This Work Group</i>			
Drug Store	Establishment that offers personal care goods, toiletries and non-controlled drugs which can be obtained without a prescription.	<i>This Work Group</i>	<p>Is not just a pharmacy, it also contains general merchandise. (Canada/US/Sweden)</p> <p>In the Netherlands, drug stores are retail driven, pharmacies are Health Care driven.</p>		
Goods Received	Bill and ship to. Party receiving goods and relevant invoice.	<i>EANCOM</i>	Departments		Bill To Shinto

Actor/role	Definition	Source	Guidance	Synonyms	Can perform following Roles
Goods Receiving Department	Department designated in the purchase order to receive the delivery of the goods on behalf of the ultimate "destination" (e.g. a person or place).	<i>This Work Group</i>	Is important in e.g. a hospital if the receiving dock is not the same as the ultimate destination. (Like cross-docking). Is a location. Could be a loading dock in smaller hospitals.		Consignee Ship To Delivery Party
Healthcare Provider	An organisation or facility or a healthcare professional that delivers healthcare to a Subject of Care. Corresponds to "Care Delivery Organisation", "Healthcare Organisation", etc.	<i>This Work Group</i>	<i>See also:</i> Consultant Nurse Doctor GP		
	An organisation or facility that delivers healthcare to a Subject of Care.	<i>GS1 GenSpecs</i>		Care Delivery Organisation, Healthcare Organisation	
	Organisation involved in the direct or indirect provision of healthcare services to an individual, or to a population or in the provision of healthcare related services	<i>European Committee for standardization</i>			
Hospital	An institution providing medical and surgical treatment and nursing care to patients.	<i>This Work Group</i>	<i>See also:</i> Operating theatre		
	An organisation or facility that delivers healthcare to a Subject of Care.	<i>GS1 GenSpecs</i>		Care Delivery Organisation, Healthcare Organisation	
	Organisation involved in the direct or indirect provision of healthcare services to an individual, or to a population or in the provision of healthcare related services	<i>European Committee for standardization</i>			
Hospital Pharmacy	Place where medication can be prepared and/or dispensed and med devices can be dispensed in a hospital. Has to be an authorized or licensed location (depends on local regulations). It is a part of a hospital, and it is responsible for purchasing and maintaining its own stocks	<i>This Work Group</i>	Can be its own unit within the hospital supply chain.	Pharmacy (generic)	

Actor/role	Definition	Source	Guidance	Synonyms	Can perform following Roles
Laboratory	<p>A building, part of a building, or other place equipped to conduct scientific experiments, tests, investigations, etc., or to manufacture chemicals, medicines, or the like.</p> <p>It is responsible for purchasing and maintaining its own stocks. It can be a separate entity, be part of a hospital, or part of an SSO.</p>	<i>This Work Group</i>		<p>See also:</p> <p>hospital laboratory hospital pharmacy</p> <p>Is a type of:</p> <p>Healthcare Provider Shared Services Organisation (SSO)</p>	<p>Buyer, Consignee, Ship To, Supplier (of services)</p>
Logistic Service Provider (LSP)	<p>Logistic Service Provider (GS1 Code). A party providing logistic services such as material handling, production, packaging, inventory, transportation, warehousing and security for another party on products which may lead to added value for the product.</p>	<i>EANCOM</i>	<p>Logistics services includes:</p> <ul style="list-style-type: none"> - transportation - cross-docking - warehousing 	<p>3PL, licensee, repackager</p>	<p>Ship To, Ship From, Manufacturer (GTSH),</p>
	<p>An umbrella term for an entity, which provides a combination of many different logistics services for another entity</p>	<i>LIM</i>			
	<p>An organisation providing logistic services (e.g. re-packing suppliers products) on products.</p>	<i>This Work Group</i>			
Manufacturer	<p>Manufacturer of goods. Party who manufactures the goods.</p>	<i>EANCOM</i>		Vendor	<p>Ship From Supplier</p>
	<p>(Brand Owner)/Repackager: Supply chain partners who provide finished goods to downstream partners (e.g. wholesalers, distributors, dispensers, institutional providers). Receives inputs and transforms those inputs.</p>	<i>GTSH</i>			
	<p>The party that produces the item.</p>	<i>XML</i>			
Patient	<p>Recipient of a medical service</p>	<i>This Work Group</i>		<p>Other types of Patient:</p> <p>In-Patient Out-Patient Ambulatory Patient</p>	<p>(ultimate) customer, (ultimate) consignee, receiver, Subject Of Care</p>
Pharmacy	<p>Place where medication can be prepared and/or dispensed and med devices can be dispensed. Has to be an authorized or licensed location (depends on local regulations).</p>	<i>This Work Group</i>	Physical Location	Drug store (esp. for OTC)	<p>Buyer, Ship To, Supplier</p>
Purchased By	<p>Party who issued an order for goods and services</p>	<i>This Work Group</i>	See: Ordered By		

Actor/role	Definition	Source	Guidance	Synonyms	Can perform following Roles
Purchasing Department	Divisional entity within an organisation providing purchasing services.	<i>This Work Group</i>		Materials Management Team Procurement Department Contracting Department Ordering Department	Buyer
Retailer	Seller of healthcare goods and/or services to ultimate consumers.	<i>This Work Group</i>		(Retail) Pharmacy , Healthcare Retailer in the community, e-Tailer	Ship To , Delivery point, Consignee , Invoicee , Payer , Ship From
Supplier	Party which provides service(s) and/or manufactures or otherwise has possession of goods, and consigns or makes them available in trade.	<i>EANCOM</i>	Most generic term covering 80% of all terms in this list. Defined by GLN & name & address	Manufacturer , Hospital (as supplier of services), 3PL vendor	Consignor , Ship From
	Supply chain partners who provide components or raw materials to the finished goods manufacturer (manufacturer). Receives inputs and transforms those inputs	<i>GTSH</i>			
	The party that produces, provides, or furnishes an item or service.	<i>XML</i>			
Surgical ward/Ward	Generic term meaning a physical location in a hospital where a patient is treated. May be part of a department.	<i>This Work Group</i>		Pre/Post-recovery room ward, Intensive Care Unit, <i>See also:</i> hospital hospital laboratory hospital pharmacy , Healthcare Provider	Buyer , Ship To , Consignee , Supplier (of services)
Transporter			See: Carrier		
Ward				<i>See</i> Surgical Ward	
Warehouse	Industrial department of a company equipped with appropriate equipment and fit-tings in which goods are stored in appropriate conditions.	<i>XML</i>		Storage	Ship From Ship To
	Central physical location for storage and handling of goods.	<i>This Work Group</i>			

Actor/role	Definition	Source	Guidance	Synonyms	Can perform following Roles
	Party taking responsibility for goods entered into a warehouse.	<i>XML</i>			
Wholesaler	Seller of articles, often in large quantities, to be retailed by others.	<i>EANCOM</i>	Means that you are licensed according to regulation of wholesale services/distribution of products (esp. for pharmaceutical products, medical devices).	3rd Party Logistics (3PL) , Logistics Service Provider (LSP) , Distributor , Dealer	Ship To , Ship From
	Distributor: Supply chain partners who are engaged in wholesale distribution of products to downstream partners, including but not limited to, manufacturers, re-packers, own-label distributors, private-label distributors, brokers, warehouses – including those for manufacturers and distributors who conduct wholesale distribution. Responsible for the handling (may transform) and storage of the traceable item.	<i>GTSH</i>			
	Seller of articles, often in large quantities, to be retailed by others.	<i>XML</i>			

Glossary of terms 2

Sources are referenced in Sources and References below.

Actor/role	Definition	Source	Guidance	Synonyms	Can perform following Roles
3PL	Logistic Service Provider (GS1 Code): A party providing logistic services such as material handling, production, packaging, inventory, transportation, warehousing and security for another party on products which may lead to added value for the product.	<i>EANCOM</i>	Netherlands prefers GTSH definition. Will be used in HC context. Definitions are diametrically opposed; need input of Process	LSP (Logistics Service Provider)	

Actor/role	Definition	Source	Guidance	Synonyms	Can perform following Roles
	Carrier/Third Party Logistics Provider (3PL): Supply chain partners, who receive, carry and deliver one or more traceable items from one point to another without transforming the traceable item(s) . Typically only has possession, custody, or control of a traceable item, but may have ownership. Responsible for the delivery or shipping of the traceable item.	<i>GTSH</i>	Team to harmonize the definitions.		
	The party legally mandated to protect the public interest.	<i>GTSH</i>			
Buyer	Party to whom merchandise and/or service is sold.	<i>EANCOM</i>	IE/SE: Very generic term which can be broken down in other terms.	Purchased by	
	Party to which goods or services are sold.	<i>XML</i>			
Carrier	(Data Element 3126) Party undertaking or arranging transport of goods between named points.	<i>EANCOM</i>	Interchangeably used with Transporter .	3PL	
	Carrier/ Third Party Logistics Provider (3PL) : Supply chain partners, who receive, carry and deliver one or more traceable items from one point to another without transforming the traceable item(s). Typically only has possession, custody, or control of a traceable item, but may have ownership. Responsible for the delivery or shipping of the traceable item.	<i>GTSH</i>			
	The party that provides freight transportation services or a physical or electronic mechanism that carries business information.	<i>XML</i>			

Actor/role	Definition	Source	Guidance	Synonyms	Can perform following Roles
Consignee	The party by whom the goods, cargo or containers are meant to be received. The actual physical receipt can take place by another party.	<i>LIM</i>	<p>Consignee & ship to need to be considered together</p> <p>Consignee & consignor are more used in a Transport & Logistics environment. In sales transaction rather ship From & ship To</p> <p>Consignee is part of physical organisation/person, not a location. (In this case use inventory location).</p> <p>Responsible for receiving goods, whereas ship To is a physical location.</p> <p>Consignee could have multiple ship to.</p>		Ship To
	Party to which goods are consigned.	<i>EANCOM</i>			
	Party to which goods are consigned.	<i>XML</i>			
Delivery Party	Delivery party. Party to which goods should be delivered, if not identical with consignee. Party to which goods should be delivered, if not the same as the buyer.	<i>EANCOM</i>	<p>This is not just for goods. In GS1 XML, it can also be services.</p> <p>The assumption is that delivery party is different from the buyer or consignee.</p> <p>Definition shows a certain duality.</p>		Ship To Receiver
	Party to which goods are delivered.	<i>XML</i>			
Goods Received	Bill and ship to. Party receiving goods and relevant invoice.	<i>EANCOM</i>	Departments		Bill To Shinto
Goods Receiving Department	Department designated in the purchase order to receive the delivery of the goods on behalf of the ultimate "destination" (e.g. a person or place).	<i>This Work Group</i>	Is important in e.g. a hospital if the receiving dock is not the same as the ultimate destination. (Like cross-docking). Is a location. Could be a loading dock in smaller hospitals.		Consignee Ship To Delivery Party
Hospital	An institution providing medical and surgical treatment and nursing care to patients.	<i>This Work Group</i>	<i>See also:</i> Operating theatre		
	An organisation or facility that delivers healthcare to a Subject of Care.	<i>GS1 GenSpecs</i>		Care Delivery Organisation, Healthcare Organisation	

Actor/role	Definition	Source	Guidance	Synonyms	Can perform following Roles
	Organisation involved in the direct or indirect provision of healthcare services to an individual, or to a population or in the provision of healthcare related services	<i>European Committee for standardization</i>			
Invoice Recipient Party	Party to whom the invoice is sent and who processes the invoice on behalf of the invoicee . Note: The invoicee is legally responsible for the invoice and can be different to the processing party.	<i>EANCOM</i>	Scenario where buyer is not necessarily invoicee. This is possible in EANCOM, in XML; however, this is not the case. The three parties required are: buyer , invoicee and invoice recipient party	Bill To	Bill to
Invoicee	Party to whom an invoice is issued.	<i>EANCOM</i>	Scenario where buyer is not necessarily invoicee is possible in EANCOM. In XML, however, this is not the case. The three parties required are: buyer , invoicee and invoice recipient party	Bill To Invoice Recipient Party	Bill To
Ordered By	Party who issued an order. GS1 Description: Party who issued an order for goods and services. Party who issued an order. GS1 Description: Ordered by. Party who issued an order. GS1 Description: Party who issued an order for goods and services.	<i>EANCOM</i>	Delegated authority permitted to order goods and services. To be used only if ordering party and buyer are not identical.	Synonyms: Purchasing Department , Ordering Party , Purchased by Function can be performed by: Authorized Nurse, Health Care Provider , Hospital, Pharmacy , Laboratory , buyer , consignee , Group Purchasing Organizations , Shared Services Organisation (SSO) , Health Authorities	Buyer Consignee
Ordering Party	Party who issued an order for goods and services	<i>This Work Group</i>	See: Ordered By		
Payee	Identifies the credit party when other than the beneficiary ----- Party, which receives payment.	<i>EANCOM</i> <i>XML</i>	Function can be performed by: Hospital ,		Buyer

Actor/role	Definition	Source	Guidance	Synonyms	Can perform following Roles
	Organization/person receiving payment for the goods/services received.	<i>This Work Group</i>	Pharmacy , Laboratory , vendor , manufacturer , supplier , distributor , factoring		
Purchased By	Party who issued an order for goods and services	<i>This Work Group</i>	See: Ordered By		
Receiver	A party who engages in receiving goods. In a commercial scenario this would be the customer	<i>XML</i>		delivery party (EANCOM), patient	Ship To , Consignee , (Ultimate) Consignee , Customer
Shipper	Party responsible for the shipment of goods.	<i>EANCOM</i>	Most generic term covering 80% of all terms in this list. Defined by GLN & name & address (Multi-functional and top-level)		
	A party who engages in shipping goods.	<i>XML</i>			
Supplier	Party which provides service(s) and/or manufactures or otherwise has possession of goods, and consigns or makes them available in trade.	<i>EANCOM</i>	Most generic term covering 80% of all terms in this list. Defined by GLN & name & address	Manufacturer , Hospital (as supplier of services), 3PL , vendor	Consignor , Ship From
	Supply chain partners who provide components or raw materials to the finished goods manufacturer (manufacturer). Receives inputs and transforms those inputs	<i>GTSH</i>			
	The party that produces, provides, or furnishes an item or service.	<i>XML</i>			
	Party taking responsibility for goods entered into a warehouse.	<i>XML</i>			
Wholesaler	Seller of articles, often in large quantities, to be retailed by others.	<i>EANCOM</i>	Means that you are licensed according to	3rd Party Logistics (3PL) ,	Ship To ,

Actor/role	Definition	Source	Guidance	Synonyms	Can perform following Roles
	Distributor: Supply chain partners who are engaged in wholesale distribution of products to downstream partners, including but not limited to, manufacturers, re-packers, own-label distributors, private-label distributors, brokers, warehouses – including those for manufacturers and distributors who conduct wholesale distribution. Responsible for the handling (may transform) and storage of the traceable item.	<i>GTSH</i>	regulation of wholesale services/distribution of products (esp. for pharmaceutical products, medical devices).	Logistics Service Provider (LSP) , Distributor , Dealer	Ship From
	Seller of articles, often in large quantities, to be retailed by others.	<i>XML</i>			

Sources and references

[1]	EANCOM	GS1 EANCOM	http://www.gs1.org/gsm/kc/ecom/eancom/2012/
[2]	GTSH	Global Traceability Standard In Healthcare	http://www.gs1.org/docs/gsm/traceability/Global_Traceability_Implementation_Healthcare.pdf
[3]	XML	GS1 eCom XML	http://apps.gs1.org/GDD/bms/Version3_1/SitePages/Home.aspx
[4]	LIM	GS1 Logistics Interoperability Model (LIM)	http://www.gs1.org/sites/default/files/docs/sectors/transportlogistics/LIM_Foundation_Report.pdf
[5]	GS1 Glossary	GS1 Glossary	http://apps.gs1.org/GDD/glossary/Pages/Home.aspx

Appendix D: Glossary of terms

Term	Definition	Source
Batch number	The batch or lot number associates an item with information the manufacturer considers relevant for traceability of the trade item. The data may refer to the trade item itself or to items contained in it.	GS1 General Specification
Data pool	A repository of data where trading partners can obtain, maintain, validate and exchange information on items and parties in a standard format through electronic means.	GDSN Trade Item Implementation Guide
Despatch advice	A message specifying details for goods despatched or ready for despatch under agreed conditions	EANCOM
EANCOM	The GS1 standard for Electronic Data Interchange (EDI) that is a detailed implementation guideline of the UN/EDIFACT standard messages using the GS1 Identification Keys.	GS1 General Specification
eCom	The conduct of business communications and management through electronic methods, such as Electronic Data Interchange (EDI) and automated data collection systems.	GS1 General Specification
Electronic business	A generic term covering information definition and exchange requirements within and between enterprises, including customers.	MoU on electronic business between IEC, ISO, ITU, and UN/ECE
Event data	Records of the completion of business process steps in which physical or digital entities are handled.	GS1 System Architecture
GDSN	Global Data Synchronization Network	GS1 General Specification
GLN	Global Location Number. The GS1 Identification Key used to identify physical locations or parties. The key comprises a GS1 Company Prefix, Location Reference, and Check Digit.	GS1 General Specification
GS1 Barcodes	A symbol that encodes data into a machine readable pattern of adjacent, varying width, parallel, rectangular dark bars and pale spaces.	GS1 General Specification
GS1 Company Prefix	Part of the GS1 System identification number consisting of a GS1 Prefix and a Company Number. The Company Number is allocated by GS1 Member Organisations. See also U.P.C. Company Prefix. GS1 Member Organisations assign GS1 Company Prefixes to entities that administer the allocation of GS1 System identification numbers. These entities may be, for example, commercial companies, not for profit organisations, governmental agencies, and business units within organisations. Criteria to qualify for the assignment of a GS1 Company Prefix are set by the GS1 Member Organisations.	GS1 General Specification
GS1 Healthcare	The mission of GS1 Healthcare is to lead the Healthcare sector to the successful development and implementation of global standards by bringing together experts in Healthcare to enhance patient safety and supply chain efficiencies.	GS1 website

Term	Definition	Source
GS1 Identification Keys	A numeric or alphanumeric data field defined by GS1 to ensure the global, unambiguous uniqueness of the identifier in the open demand or supply chain.	GS1 General Specification
GS1 MOs	A member of GS1 that is responsible for administering the GS1 System in its country (or assigned area). This task includes, but is not restricted to, ensuring brand owners make correct use of the GS1 System, have access to education, training, promotion and implementation support and have access to play an active role in GSMP.	GS1 General Specification
GS1 System of Standards	The sum total of all the artefacts created by the GS1 community through GS1's community development processes, including GS1 Standards, GS1 Guidelines, GS1 Solutions, and GS1 Services	GS1 System Architecture
GS1 XML	The GS1 standard for Extensible Markup Language schemas providing users with a global business messaging language of e-business to conduct efficient Internet-based electronic commerce.	GS1 General Specification
GSMP	The Global Standards Management Process (GSMP) is the global forum for users to bring business needs that require standard based solutions to create a more efficient Supply Chain.	GSMP Process Manual
GSRN	Global Service Relation Number. The Global Service Relation Number is the GS1 Identification Key used to identify the relationship between an organisation offering services and the recipient or provider of services. The key is comprised of a GS1 Company Prefix, Service Reference and Check Digit	GS1 General Specification
GTIN	Global Trade Item Number. The GS1 Identification Key used to identify trade items. The key comprises a GS1 Company Prefix, an Item Reference and Check Digit.	GS1 General Specification
Hospital, Care institution	See appendix C	
Importer	See appendix C	
Intermediary/Service provider	See appendix C	
Logistic unit	An item of any composition established for transport and/or storage that needs to be managed through the supply chain. It is identified with an SSCC.	GS1 General Specification
Logistics service provider	See appendix C	
Manufacturer	See appendix C	
Master data	Attributes of a real-world Entity that are static (unchanging through the life of the entity) or nearly so.	GS1 System Architecture
Order to cash	The concept of dividing the supply chain of goods and services into three basic steps: ordering, delivery and payment. Each of these steps can be supported by the set of GS1 standards.	GS1 Order to Cash deployment kit
Partner dependent master data	Relationship Dependand Data is Master Data that can vary from one trading partner to another such as a marketing conditions, prices, discounts, logistics agreements, payment terms, quantity ordered etc.	BMS Catalogue Item Synchronisation

Term	Definition	Source
Partner independent master data	Within the context of Data Synchronization, master data or constructs applicable across multiple business transactions and constant across all trading partners, such as item, party, standard terms, etc.	BMS Catalogue Item Synchronisation
Retail pharmacy, hospital pharmacy	See appendix C.	
RFID	A data carrier technology that transmits information via signals in the radio frequency portion of the electromagnetic spectrum. A Radio Frequency Identification system consists of an antenna and a transceiver, which read the radio frequency and transfer the information to a processing device, and a transponder, or tag, which is an integrated circuit containing the radio frequency circuitry and information to be transmitted.	GS1 General Specification
Serial number	A code, numeric or alphanumeric, assigned to an individual instance of an entity for its lifetime. Example: Microscope model AC-2 with serial number 1234568 and microscope model AC-2 with serial number 1234569. A unique individual item may be identified with the combined Global Trade Item Number (GTIN) and serial number.	GS1 General Specification
SSCC	Serial Shipping Container Code. The GS1 Identification Key used to identify logistics units. The key comprises an Extension digit, GS1 Company Prefix, Serial Reference, and Check Digit.	GS1 General Specification
Traceability	Traceability is the ability to track forward the movement through specified stage(s) of the extended supply chain and trace backward the history, application or location of that which is under consideration.	Global Traceability Standard for Healthcare
Transactional data	Business documents that are shared bilaterally between trading partners, each document serving to automate a step in a business process involving a business transaction between parties.	GS1 System Architecture
Wholesaler	See appendix C	