

Recommendations for cash logistics

Identification and electronic messages

1.1, March 2020

Document description

Document title	Recommendations for cash logistics; Identification and electronic messages.
Document date	March 2020
Version	1.1
Status	Final
Description	Recommendations and specifications for implementation of GS1 standard in the process of cash logistics. Document is intended for commercial banks and CIT companies.

Document was created by

Organization/Company
GS1 Slovenija
Banka Slovenije

Revisions

Version	Date	Changed by	Change contents
1.0	22.09.2017	GS1, BS	Initial / original document
1.0	14.02.2019	GS1, BS	Adaptation and translation to English
1.1	30.03.2020	GS1, BS	Added recommendations for using the message Transport Instruction Response

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Kazalo

1.	Introduction	5
1.1.	Purpose of the document	5
1.2.	Cash logistics sector	5
1.3.	Basic conditions	6
2.	Basis of the GS1 standards.....	8
2.1.	GS1 identification system.....	8
2.2.	Company prefix (GCP).....	10
3.	Application identifiers.....	10
3.1.	Codes in the GS1 system of standards	11
4.	Fundamentals of cash logistics.....	11
4.1.	Cash cycle in general.....	11
4.1.1.	Business partners in cash logistics and their functions.....	12
5.	GS1 CashEDI system.....	12
5.1.	Identification system in cash logistics	12
5.1.1.	Identification of cash.....	13
5.1.2.	Identification of business partners and locations	14
5.1.3.	Identification of transport units	15
5.2.	Data media	15
5.3.	Messaging system	15
6.	Traceability	16
7.	Electronic messages in cash logistics	17
8.	Processes/scenarios in cash logistics	18
9.	Test data.....	20
9.1.	Types of partners in messages.....	21
10.	Quantity of data elements in messages.....	22
11.	Cancellation of transaction	22
11.1.	Reception of unordered/non-standard transport units	23
12.	Identification of components	23
12.1.	Identification of process	23
12.2.	Identification of message type	24
12.3.	Identification of message	24
12.4.	Identification of transaction	24
12.4.1.	ID of transaction in <i>Despatch Advice</i>	25
12.4.2.	ID of transaction in <i>Transport Instruction</i>	25
12.4.3.	ID of transaction in <i>Receiving Advice</i>	25
12.5.	Identification of shipment	25

12.6.	Hierarchy of packing	25
12.6.1.	Identification of levels of packing (level ID)	26
12.6.2.	Subordination: one logistics unit contains another	27
12.6.3.	Types of packing	28
12.7.	Identification of services	28
12.7.1.	Entry of services	29
13.	Components of messages	30
13.1.	Total value of shipment (checksum)	30
13.2.	Control quantities in final receipt report	30
13.3.	Sending of bank account and reference	31
14.	Service message (ARA)	31
15.	Use of electronic signature	31
16.	Scenario A	35
16.1.	Test scenario	36
17.	Scenario B: withdrawal at the central bank	39
17.1.	Test scenario	40
17.2.	Links to XML files	41
18.	Other scenarios	41
19.	Links	43

Contents

1. Introduction

1.1. Purpose of the document

This document¹ describes the application of the GS1 standards in the area of transportation of secure shipments and cash logistics.

The processes recommended by this document comply with the GS1 specifications and the international recommendations. To understand the details, familiarity with the basis of the GS1 standards is required, in particular the principles of identification, traceability and electronic data exchange.

This document is subject to maintenance by GS1 Slovenia and the Bank of Slovenia, and describes two general processes in detail: lodgement and withdrawal. Other scenarios and electronic messages for processes at commercial banks are also available.

1.2. Cash logistics sector

Banks and other business entities that use cash are required to provide adequate quantities of the cash that they need for their services and transactions with customers in the shortest possible time. Payments and sales are unimaginable without a sufficient quantity of cash in circulation. For withdrawals and lodgements of cash alike, it is important that communications between business entities are fast, efficient and secure. The transportation of cash has an additional requirement of physical security, which understandably is on much higher level than, for example, for the supply of food products.

For the market requirements to be met, cash logistics needs a high level of standardisation and automation even at individual users such as large banks, but when other participants such as CIT companies, customers and even inspection authorities get involved in the process, oversight of the entire process becomes extremely complex. Without agreements in the form of common standards, proper oversight of this process is impossible.

The GS1 standard for cash logistics is one of the two cash logistics standards approved by the European Central Bank, and is the standard applied in Slovenia at the proposal of the Bank of Slovenia. Standardisation in this project does not only encompass central banks and commercial banks, but also applies more broadly, all the way to customers of individual commercial banks, and throughout the cycle of supplying cash to the market.

Standardisation provides for benefits in:

- the planning of inventories and capacity,
- the tracking of orders and shipments,
- the recirculation of banknotes, the sorting of banknotes by quality, and the corresponding reporting,
- the optimisation of supplies and the increased reliability of the process at multiple service providers and transport providers (in case of problems, another partner is able to step into the process simply),
- new and better services in the supervision of ATMs,
- supervision of cassettes in ATMs,
- supervision of transport units (metal containers, etc.).

1.3. Basic conditions

For the successful application of this document and the introduction of processes into business practice, it is necessary to comply the rules of the GS1 system, which in particular requires the correct and complete **identification of all participating elements, business partners, transport units, shipments and individual articles**.

It is necessary to use the GS1 identification number to label these elements. It is always possible to use additional (parallel) or internal identifiers, but the logistics system and the corresponding data transfer work best with the proper application of GS1 standards.

In practice, this means that all partners in the process must be designated with a global location number (**GLN**³⁶), all transport units with a serial shipment container code (**SSCC**²⁴), and all elements of an order (individual banknotes or coins, and services) with a global trade item number (**GTIN**³³), while all returnable packaging such as metal containers may be designated with a global returnable asset identifier (**GRAI**³⁷). Shipments as a whole are designated with a global shipment identification number (**GSIN**). CIT companies may designate their consignment with a global identification number for consignment (**GINC**).

I. GS1 standard

2. Basis of the GS1 standards

An automatic controlled communication system between cash users in the supply chain is a prerequisite for attaining a higher level of supervision in the flow of cash.

The GS1 standards provide for the identification of individual elements such as transport or packaging units, their labelling with barcodes or radio frequency tags, and data exchange in standardised electronic messages.

2.1. GS1 identification system

The GS1 standards are based on a global identification model that provides for a hierarchical/federative approach to the designation of products, services and locations. This identification model has a series of specific identification keys such as GTIN, GLN, SSCC and GRAI, which are used differently according to their intended purpose. The GTIN is used to label products, the GLN is used for locations, the SSCC for transport units, the GRAI for returnable packaging, etc.

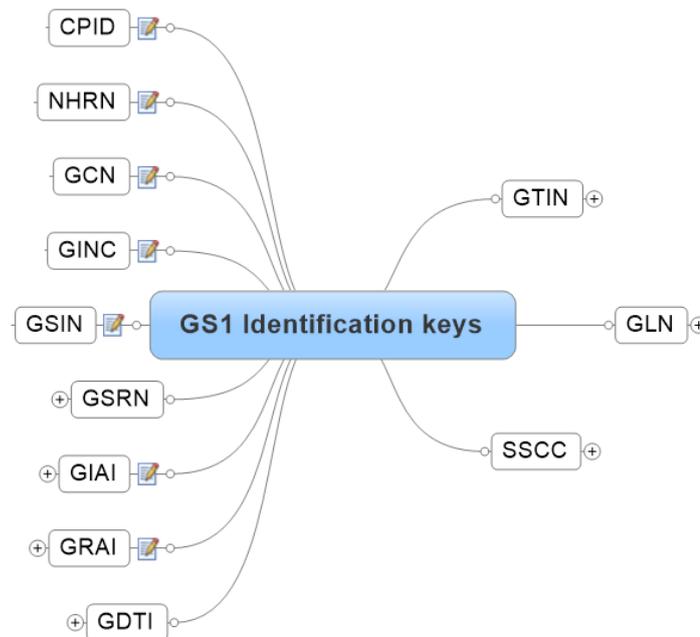


Figure 2—1: GS1 identification keys

The GS1 system sets out several identification keys and other data attributes used in a variety of business scenarios. The identification keys and data attributes are written with the help of application identifiers (AIs).

The **GTIN**⁸ (Global Trade Item Number) is used for the unique identification of a trade item. This can comprise products or services. Each trade item that differs from another has its own GTIN.

The **GLN**⁹ (Global Location Number) is used to identify locations and legal entities. It may be a legal entity (firm), a department of a firm (warehouse) or a function performed at a firm (a firm's accounting department). The GLN is a multi-sector global solution for identifying locations irrespective of the required granularity. The location number allows for the identification of a micro location within a firm, which allows for the easy addressing of individual locations with electronic documents. The basic rule is that a separate GLN is assigned to any entity that needs to be identified. **It is good practice to assign a GLN at the origin, which means that the identification number is created by the owner of the location.** The number thus assigned becomes a global reference of the location used by all partners.

The **SSCC**¹⁰ (Serial Shipment Container Code) is the GS1 identification key used to identify logistic units. The SSCC allows for each unit to be designated uniquely, which provides benefits in the tracking, ordering, delivery and automatic receipt of goods.

The SSCC is of key importance to the identification and traceability of transport units. It is valid for the entire lifetime of a transport unit, from its creation (in the process of preparation and packing), until its termination when the contents of the shipment are received. Information about a transport unit remains active until the end of the analysis period, which is at least one year.



Figure 2—2: Example of SSCC

The above figure illustrates an example of an SSCC, which consists of the extension digit 3 (first digit), the firm’s GCP (in this case: 383123456), the sequence number of the transport unit (0000001), and a check digit (9).

In a barcode the SSCC is given the application identifier of 00 in the GS1-128 symbology.

The **GSRN**¹¹ (Global Service Relation Number) is the GS1 identification key used to identify a service relationship between a firm and a customer, such as club membership, a loyalty programme or a patient at a hospital.

The **GRAI**¹² (Global Returnable Asset Identifier) is one of the GS1 identification keys for asset identification. As the name indicates, the GRAI is used for designating returnable assets. The GRAI can be used simply for asset identification and tracking, or can be part of a lending or renting system where two or more firms collaborate, allowing the firms to scan the assets for exit from or entry into operations.

The **GIAI**¹³ (Global Individual Asset Identifier) is the second of the GS1 identification keys for asset identification. The GIAI is used at a firm to identify fixed assets of any value that need to be identified individually, such as computers, desks, vehicles or components. If the firm uses a unique identifier for its assets, this allows it to identify, track and manage them at all times during their use. The GIAI provides for fast searching of assets in the database, so that their use, location and condition can be recorded, for example for managing inventories, for updating maintenance records, for registering software upgrades or for assigning assets to a user or a location.

The **GSIN**¹⁴ (Global Shipment Identification Number) is a number assigned by a seller (shipper) of goods. It is a globally unique number that denotes a logic group of physical units for the purposes of transportation of a shipment.

In barcode form the GSIN is entered using GS1-128 symbology, and an application identifier 402. More information about the use and attributes of the GSIN is given in the brochure.⁴²

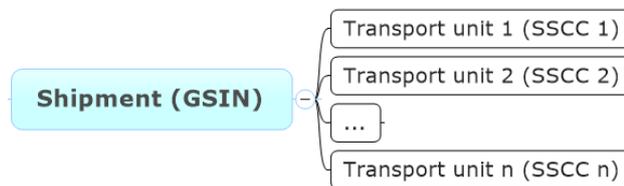


Figure 2—3: GSIN identifies a group of transport units as a single item

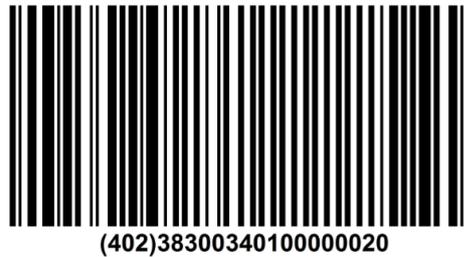


Figure 2—4: Example of GSIN in GS1-128

The **GINC**¹⁵ (Global Identification Number for Consignment) denotes an entire consignment that may be intended for multiple receivers.

2.2. Company prefix (GCP)

The national GS1 organisation assigns a GCP (Global Company Prefix) to any firm that requests one. The **GCP is always a prefix**: the root of each identification number assigned by the firm in question. This means that all identification numbers of the same firm always start with the same prefix. This is also a way of identifying firms from the barcode digits.

A longer GCP means a smaller interval of available digits. From its global prefix a firm can create its own identification tree, which is used according to its own needs and the needs of its partners.

More information about the assignment of the GCP can be obtained from national GS1 organisations.

3. Application identifiers

The GS1 standard allows the use of special codes named application identifiers (AIs), which are used in barcodes to indicate what data is recorded in the remainder of the barcode. For example, AI 11 means that the production date follows, AI 21 means that a serial number follows, and AI 00 means that the SSCC follows.

The following AIs are used in cash logistics:

AI	Description	Format	Data name
00	Serial shipment container code	N2+N18	SSCC
01	Global trade item number	N2+N14	GTIN
402	Global shipment identification number	N3+N17	GSIN
414	Global location number	N3+N13	LOC No
8003	Global returnable asset identifier	N4+N14+X..16	GRAI
8004	Global individual asset identifier (vehicle fleet, technical resources, etc.)	N4+X..30	GIAI

In the above table, the format means the method by which the data is entered in the code. For example, N4+X..30 means that the application identifier is entered using four digits, followed by up to 30 alphanumeric characters.

The GTIN is recorded as a 14-digit field on the logistics label (and in databases). In this case the GTIN is prefixed with 0, but in special cases another digit can appear here (e.g. 9 for variable content).

The data name column in the above table means the code entered on the logistics label before the data in question. More on this subject is given by other documents on the logistics label and the GS1-128 symbology. More on the use of application identifiers is given in the general GS1 specifications.

3.1. Codes in the GS1 system of standards

The codes generally used in the GS1 message system are international, verified, and regulated by various organisations, most notable the ISO and UN/CEFACT, while some codes are also overseen by GS1.

The content of the codes is obtained via the global data dictionary (GGD) where all possible codes are listed, or a reference where the code can be obtained is stated.

All codes are reachable via the data dictionary.³⁵

4. Fundamentals of cash logistics

4.1. Cash cycle in general

Legislation and new business requirements mean that financial institutions now face specific problems in how to organise and oversee the circulation of cash. The requirements are dynamic and changeable, but the aim of all of them is to reduce operating costs, to increase the level of security, and to increase the integration of hardware and manual procedures.

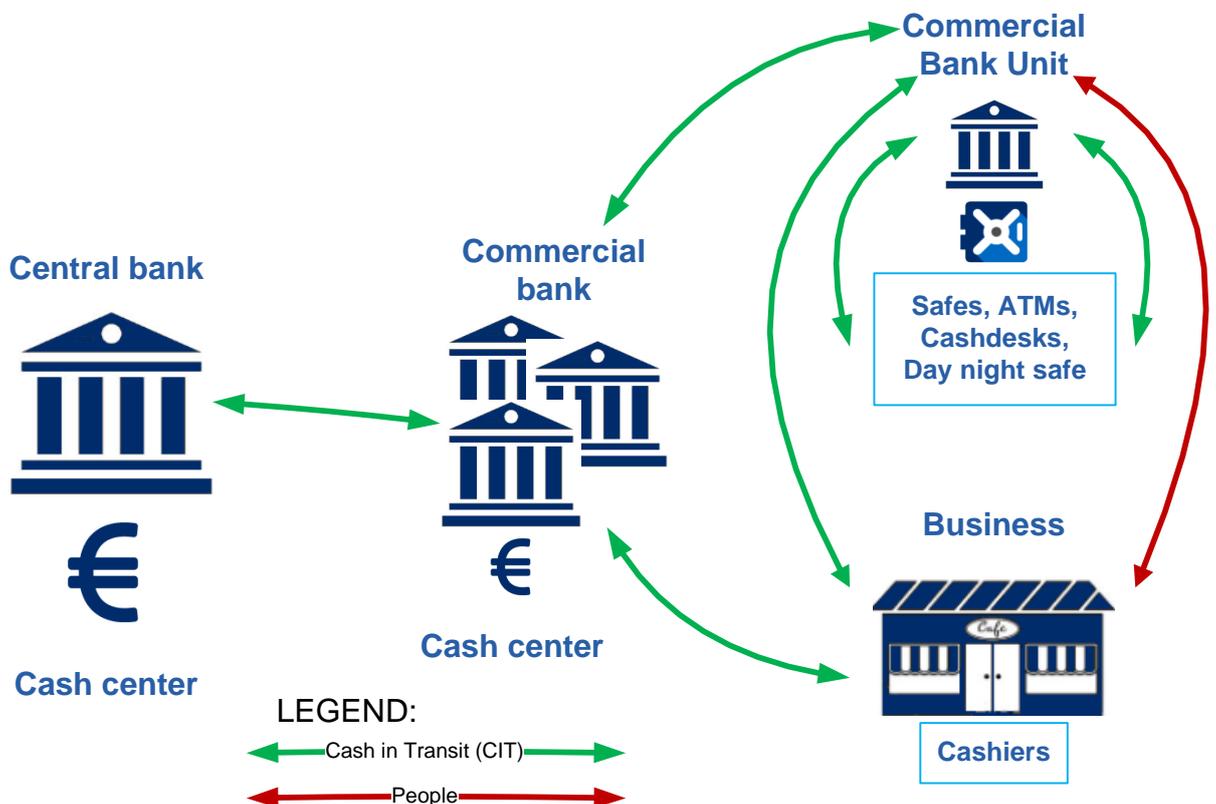


Figure 4—1: Cash cycle

The cash cycle always begins at the banknote printing works or at the mint with which the Bank of Slovenia works. The Bank of Slovenia usually issues cash to commercial banks, who circulate it to consumers via their ATMs and branches. Consumers either hold the cash, or use it to purchase goods and services. Business entities collect the aforementioned cash, and transport it to cash centres via CIT firms, where the cash is tested for authenticity and fitness. If the cash is authentic and in fit condition, it is returned to circulation; if not, counterfeits are handed over to the police, while cash that is not in fit condition is returned to the Bank of Slovenia, where it is destroyed.

4.1.1. Business partners in cash logistics and their functions

The GS1 standards in the area of cash operations provide for oversight of the circulation of cash from the printing works/mint via central banks to individual ATMs, for which reason their use involves various partners between whom goods and data are exchanged.

Cash logistics involves at least the following partners:

- The Bank of Slovenia orders cash from the printing works or mint, and receives and sends cash from/to commercial banks and other parties.
- Commercial banks withdraw and deposit cash from/to the Bank of Slovenia. They also supply cash for the needs of their customers, ATMs and any other withdrawal points.
- A cash centre is a physical location where cash is collected for storage and processing or for transport to another location.
- A customer or business entity is a party that deposits surplus cash and withdraws ordered cash at their bank.
- A CIT company is a service firm that undertakes the secure, reliable transportation of cash between reception points. The CIT company decides usually by itself on how to organise the transportation.
- Individuals are also involved in cash transactions.

The process also involves specific parties such as information service providers and suppliers of technical equipment (manufacturers of ATMs, security systems, metal containers, etc.).

5. GS1 CashEDI system

The CashEDI system is a package of recommendations for the application of international standards in the area of cash logistics. The system consists of recommendations for identification and recommendations for the electronic messages that included partners exchange between each other. The system is designed for the fast, reliable transfer of data, and the possibility of traceability for individual transport units.

5.1. Identification system in cash logistics

The precise structuring and labelling of all reception points and transport units are the keys to the reliable functioning of cash logistics. The elementary identification keys are listed below, and are described in detail at the beginning of this document.

Reception points are marked with a **GLN** (global location number), which is used by all business partners, and potentially individual premises. Transport units that are reused, for example metal containers and cassettes, are identified with a **GRAI** (global returnable asset identifier), while all individual transport units without exception carry an **SSCC** (serial shipment container code).



Figure 5—1: Example of an SSCC on a seal

Complete shipments (a group of transport units travelling from the same sender to the same receiver) are designated with a **GSIN** (global shipment identification number). When shipments are in transit from a CIT firm to parties, the consignment is designated with a **GINC** (global identification number of consignment). Individual banknotes and coins are designated with a **GTIN** (global trade item number), where each banknote/coin has a different GTIN for different quality statuses (new, fit, unfit).

This also applies to all bank branches, ATMs and cash centres, which must be designated with a **GLN**, primarily to ensure the faster, easier and more efficient organisation of transportation and deliveries of cash.

A transport unit always has its own identification number, an origin and a destination. For example, the process for the replacement of a cassette in an ATM can involve the designation of the physical cassette with a GRAI, its filling with banknotes, its packing into a transport unit designated with an SSCC, and its delivery for replacement to an ATM designated with a GLN. Because the numbers are globally unique, there is no need to change the identification system even when the transport services are moved from one firm to another. Another benefit is that it is much simpler for supervisory authorities to oversee the circulation of cash in the country.

The global model for identifying spatial locations with a GLN is also useful for CIT firms because they can accept a list of identification numbers and coordinates from any party in the same manner, and also handle it in the same manner in planning their own routes.

The GRAI used to designate all technical and transportation equipment, such as ATMs, carts, strongboxes and trucks, is also very useful, and allows for comprehensive oversight of this equipment (e.g. servicing, handover, current location).

5.1.1. Identification of cash

Banknotes and coins are sorted by denomination and quality, and are also designated as such. The ECB is responsible for the designation of euro banknotes and coins, and publishes a list⁴ for this purpose. Commemorative coins have their own national identification numbers, and the Bank of Slovenia is responsible for their designation. All **GTINs** are unique and unrepeatable.

Type	Currency	Series	Denomination	Packing unit	Status	Value	GTIN
Banknote	EUR	ES1	5	item	New	5	4107001000209
Banknote	EUR	ES1	5	packet (100)	Unprocessed	500	4107001000315
Banknote	EUR	ES1	5	bundle (1,000)	Unfit	5,000	4107001000377

Type	Currency	Series	Denomination	Packing unit	Status	Value	GTIN
Banknote	EUR	ES1	5	safebag (10,000)	Fit	50,000	4107001000421
Banknote	EUR	ES1	5	cardboard box (10,000)	New	50,000	4107001000384
Services	EUR				Lodgement		4107001000070

Figure 5—2: Partial list for identification of cash

5.1.2. Identification of business partners and locations

Each reception point in cash logistics **must be designated with a GLN**. With their membership of the GS1 system, all members are provided with their own location number, which designates the registered office of their firm. Within the GCP section, they can create additional location numbers for their plants, units and other significant points in logistics.

A review of the delivery and receipt of transport units of cash of customers or business partners shows that some of the partners are members of the GS1 system with their own **GLN**, but others are not. The approach is nevertheless simple: where possible, we use an assigned GLN, but if the partners do not have one, we assign our own for their use. A partner who has been assigned a GLN in this manner may not use the number for other purposes with other business partners. If it needs a GLN for its own business, it must formally obtain one from GS1.

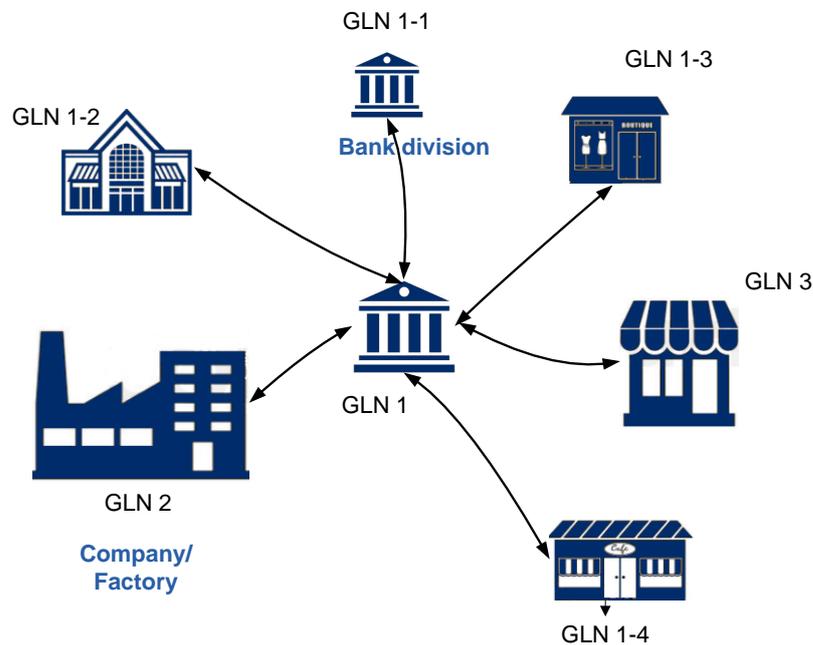


Figure 5—3: Links between business partners and their identification

The home bank has its own GS1 interval with which it can designate its own units. The factory and one of the customers in the above figure are also members of the GS1 system, each with their own interval. All the others are not members of the GS1 system, but are simultaneously customers of the home bank. In this case they can obtain a GLN from the home bank's interval. In the above figure the customers without their own GS1 prefix and the bank unit are designated GLN 1-1, GLN 1-2, GLN 1-3 and GLN 1-4, which (symbolically) means that they belong to the interval of the bank's home unit (GLN 1). The customers with their own GS1 interval are designated GLN 2 and

GLN 3. Here it is important to note that **the GLN assigned by the bank is classed as an internal number, and cannot be used by the user for different purposes.**

5.1.3. Identification of transport units

Transport units in cash logistics are shipments of all possible forms and size, whether safebags, metal containers, cardboard boxes or cassettes. All transport units **must have their own SSCC**, which is a prerequisite for successful traceability and oversight of shipments.

The principle is that all transport units have their own SSCC that lasts for the entire lifetime of the transport unit. This lifetime is longer than the transport route alone lasts, as it is possible that a particular transport route is re-established in subsequent investigations.

Transport units and their SSCCs are generally recorded in GS1-128 symbology, although the identification numbers can also be written in other symbologies (DataMatrix) or media (RFID tags). But for the sake of transparency of use, an agreement on GS1-128 applies.

It should also be noted that multiple transport units can make up a single shipment, each shipment being marked with a GSIN in each case. The designation of shipments is described in the brochure on the GSIN.⁴²

5.2. Data media

Data media are elements that allow for the recording of data in a way that allows for simple, fast and reliable transfer into information systems. The media are various barcodes and RFID (radio frequency identification) tags.

The latest scanners can read all types of barcodes, including two-dimensional ones, while older scanners are limited to linear barcodes. This is also the reason that the use of advanced two-dimensional codes is not prescribed as mandatory, as this could force users to purchase new scanners. **The use of linear barcodes in EAN-13²⁷ and GS1-128²⁶ symbology is therefore agreed in cash logistics.**

5.3. Messaging system

In the cash logistics process partners use electronic messages to communicate their intentions or activities to one another (there are two processes in cash logistics, withdrawal and lodgement). Messages are standardised data packages that provide for the entry and exchange of data, depending on the needs of the specific business process. In the ordering process, an order is first generated, then confirmed, then the goods are ordered and picked up. A message is generated in each part of the process.

The messages are based on the GS1 XML¹⁹ standard. This is the standard for electronic messages that contain XML schemes for various types of messages: orders, delivery notes, invoices, inventory planning, logistics. These messages are used in various industries, including of course the cash logistics sector. Each message has a precise structure, and contains the agreed data needed by the participating partners. The messages are universal and independent of internal IT solutions or platforms, which is one of their advantages.

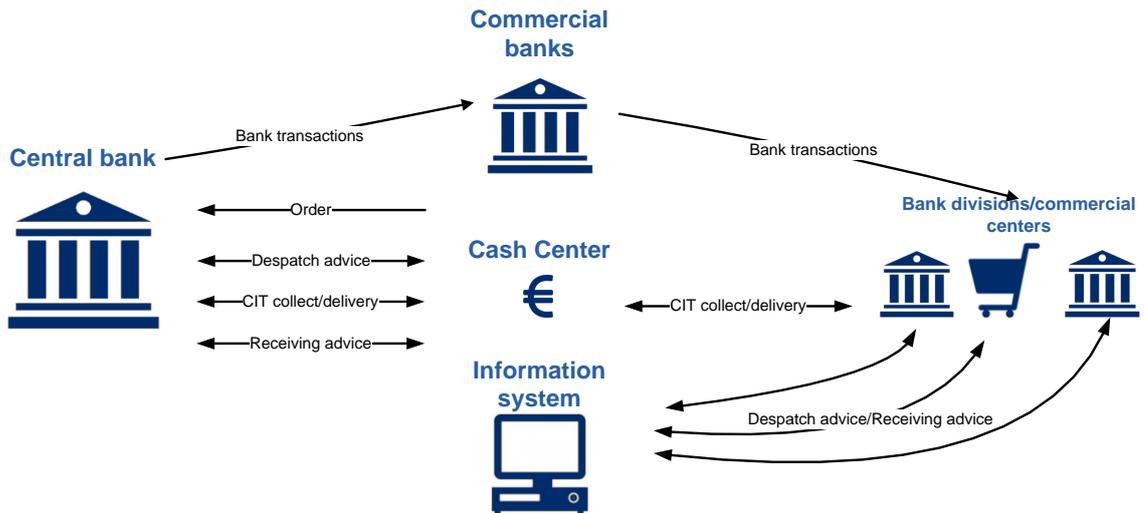


Figure 5—4: Messages in cash logistics

In principle, each electronic message causes the generation of an application receipt and acknowledge message (ARA), which informs the sender that the receiver has received the message and has successfully or unsuccessfully accepted it. The ARA is used as a service message, and allows the receiver of the original message to inform the sender of any errors in the content of the original message (wrong format, wrong address, wrong version, etc.). It is important that all stakeholders in the cash logistics chain use ARA messages, as this increases the reliability of the whole system.

6. Traceability

Traceability²⁸ is the ability to determine where a particular transport unit is, and what has happened to it on its journey from its creation to the current position, or its termination.

The identification of units and the accuracy of the related data are of key importance in ensuring traceability.

The key is the link between the physical units and the information system, or the flow of data. This means that at all points of change in the position of a transport unit or the related data, it is necessary to record the status at all participants in the supply chain systematically and in a standardised manner.

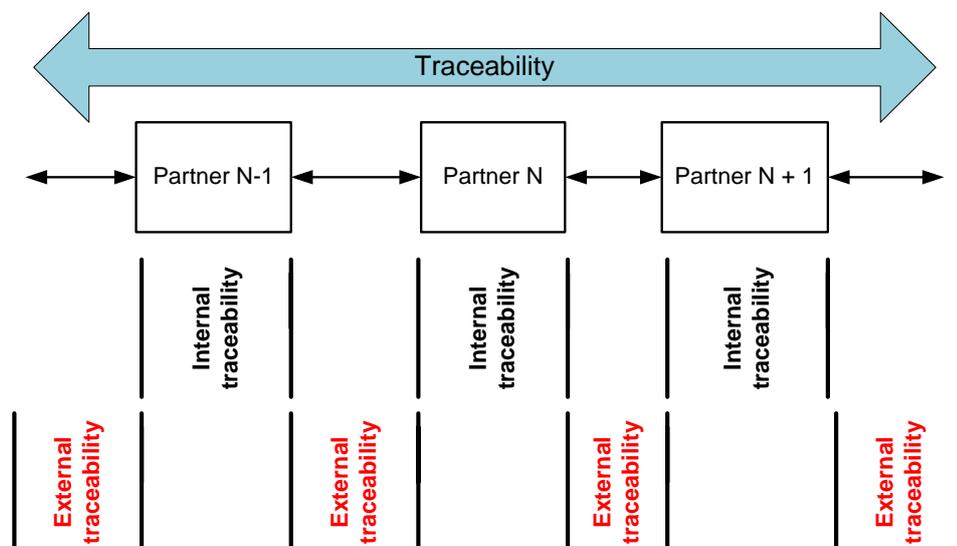


Figure 6—1: Traceability

Each partner in the transaction path must provide a record of events or changes in the status of individual transport units. For this to be possible, each of the partners must know all the requisite data on the individual unit at entry when the unit was accepted into its domain, and must record all events within its system and submit the data at exit to the next partner in the chain.

A traceable unit may be an entire shipment (for example, a shipping consignment), a logistic unit such as a pallet, an individual article, a group or articles, etc. Each traceable unit must be correctly labelled, and the partners must communicate the packages of data accompanying the unit.

It is understandable that this is only possible when the structure of the data and identification system are standardised at all participating users.

The GS1 standards for identification and electronic transacting prescribe the data structures that need to be provided, scanned and stored at individual points.

Traceability is a special area of the GS1 standards, and accordingly there is a large amount of documentation on the GS1 website.

In cash logistics it must be possible to track each transport unit with 100% reliability, which means that at all points of the passage of the transport unit from one location to another it is necessary to record these changes. Recording is provided by scanning the barcodes of the identifiers of transport units. Here it is also necessary to know which transport units are expected at which location. Consequently, it is necessary to inform partners in advance of incoming transport units and their identifications, which is done with the electronic messages described in this document.

7. Electronic messages in cash logistics

The definitions of messages (schemes) and naming of data elements in messages must be as abstract as possible, so that the messages can be used in the most diverse sectors.

The financial sector has very specific expressions, which need to be harmonised with the usual terminology in logistics.

Process (Slovene expression)	English expression	GS1 message
Naročilo gotovine	<i>Cash Order</i>	Order
Obvestilo o dostavi	<i>Notification of Delivery</i>	Despatch Advice
Najava odpreme	<i>Notification of Lodgement</i>	Despatch Advice
Navodila za prevoz	<i>Transport Instruction</i>	Transport Instruction and Response
Potrdilo o prevzemu	<i>Confirmation of Receipt</i>	Receiving Advice
Potrdilo o odpremi	<i>Confirmation of Despatch</i>	Despatch Advice
Obvestilo o odpremi	<i>Notification of Despatch</i>	Despatch Advice
Potrdilo o dostavi	<i>Confirmation of Delivery</i>	Despatch Advice
Potrdilo o štetju	<i>Final Receipt</i>	Receiving Advice
Servisno sporočilo	<i>Service Message (ARA)</i>	Application Receipt Acknowledgement (ARA)
Najava pologa	<i>Order of Lodgement</i>	Despatch Advice

It is evident that the same standard GS1 message is used in various business processes in cash logistics. This is possible because the informative and status part of the message contains elements that can be used as indicators of the purpose of the message.

Each message also gets its own response in the form of a service message (ARA), which tells the sender that its message has been received, understood and is being processed. These service messages are vital, as they provide for the greater reliability of the system.

8. Processes/scenarios in cash logistics

In documents with examples of XML messages that supplement these recommendations, individual scenarios of how to use electronic messages in selected cases are described.

The following naming system is used in the description of scenarios and messages: PROCESS - SCENARIO - MESSAGE.

The process is designated **P** for lodgement and **D** for withdrawals. The scenarios are designated with letters from A onwards. The message is the sequential number of the electronic message in the individual scenario.

For example, **P-A-2** means that it is the second message in the lodgement process under scenario A.

The primary processes of lodgement and withdrawal are defined in scenarios A and B.

In practice many different scenarios derived from those described are used. It should be noted that under all the derived scenarios it is necessary to take account of the fundamental rules stated in this document and the recommendations in the first two scenarios for lodgement and withdrawal (A and B). Any further scenarios will be developed in collaboration between GS1 and users.

II. CONSTRUCTION OF XML MESSAGES

9. Test data

In the case of the messages below and in XML files that are available on published links, we use the following test data (which has no link to real data). All messages are based on the GS1 XML standard, version 3.3.

Element	Content
Partner A	GLN: 3838438000005 Bank of Slovenia Slovenska 35 1000 Ljubljana
Contact at Partner A	Anton Anton@bsi.si Tel: +386 1 111-11-11
Partner A's cash centre	GLN: 3838438000036 Bank of Slovenia cash centre Slovenska 35 1000 Ljubljana
Partner B	GLN: 3830034089002 Commercial bank B Ulica B 1000 Ljubljana
Contact at Partner B	Bine Bine@PartnerB.com Tel: +386 122 22 22
Partner B2 (warehouse)	GLN: 3830034089033 Ulica B2 1000 Ljubljana
CIT partner	GLN: 3830034089996 Ulica C 3 1000 Ljubljana
Contact at CIT partner	Ciril Ciril@PartnerC.com Tel: +386 1333 33 33
Partner K (customer of bank)	GLN: 3830034088883 Partner K Ulica K 1000 Ljubljana
Data on shipment	
Shipment (shipment ID is GS1 key GSIN)	GSIN1: 3830034010000013 GSIN2: 3830034010000020
GINC	383003408-A-B-C-D-E

Element	Content
Transport unit	SSCC1: 338300340100000021 (for banknotes) SSCC2: 338300340100000038 (for coins) SSCC3: 338300340100000045 (bag) SSCC4: 338384380000000440 SSCC5: 338384380000000457 SSCC6: 338384380000000464 (bag) SSCC7: 338384380000000471 (bag) SSCC7: 338384380000000488 (metal container)
Data on units (specification)	GTIN1: 4107001000742: 10-euro banknote, new GTIN2: 4107001000834: packet of 100 10-euro banknotes, new GTIN3: 4107001005075: 1-euro coins GTIN4: Transport service GTIN5: 4107001002456: packet of 100 100-euro banknotes, new GTIN6: 4107001002166: packet of 100 50-euro banknotes, new GTIN7: 4107001005174: packet of 10 rolls of 2-euro coins (EUR 500) GTIN8: 4107001001831: 50-euro banknote GTIN9: 4107001002371: 100-euro banknote GTIN10: 4048888005294: mixed banknotes GTIN11: 4107001000056: Lodgement service GTIN12: 4107001000759: 10-euro banknote GTIN13: 4107001001299: 20-euro banknote GTIN14: 4107001002371: 100-euro banknote GTIN15: 4107001002463: packet of 100-euro banknotes, used GTIN16: 4107001001633: packet of 20-euro banknotes GTIN17: 4107001000025: suspect banknote (not recognised by counting machine)
Global returnable asset identifier: a strongbox has its own GRAI. The GRAI must be prefixed with 0 when being entered in the data field.	GRAI: 03830034018880ALU123

9.1. Types of partners in messages

Partners are generally identified with a GLN, which can be supplemented with full address data. The use of the GLN is by far the simplest way of addressing location data.

For example, a party with the GLN 3830034089002 sends units via a CIT firm with the GLN 3830034089996 to a receiver with the GLN 3838438000005 at its cash centre with the GLN 3838438000036, the values are as illustrated in the table below.

XML element	Value	Remarks
Sender	3830034089002	Sender of message. In general this is the registered office of the firm or legal entity, not a branch.
Receiver	3838438000005	Receiver of message. In general this is the registered office of the firm or legal entity, not the branch that is the actual receiver of the goods.
logisticServicesSeller	3830034089996	Seller of logistics services (CIT firm)
logisticServicesBuyer	3830034089002	Buyer of logistics services
billTo	3830034089002	Payer of logistics services

XML element	Value	Remarks
Shipper	3830034089002	Sender of goods, usually also payer of transport services
shipTo	3838438000036	Delivery point at receiver of goods, for example a warehouse or cash centre
ShipFrom	3830034089002	Pick-up point at sender of goods, for example a cash centre or cash deposit machine
Carrier	3830034089996	Carrier
Shipper	3838438000036	The firm (registered office) sending the goods

If for whatever reason there are no GLNs, a secondary method of entry can be used: the XML scheme has an additional data structure that allows for the textual entry of data about a firm. Of course it should be noted that the function of the partners sometimes reverses (the receiver becomes the sender on the next message).

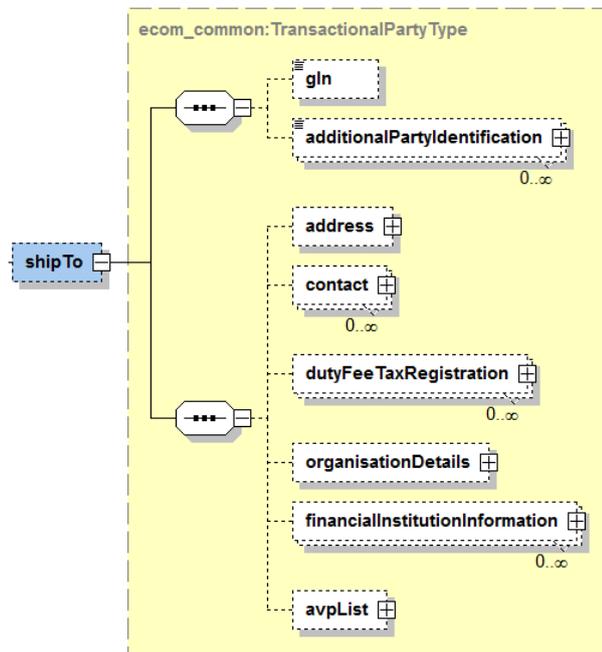


Figure 9—1: Structures for additional data at partner

10. Quantity of data elements in messages

The messages in the examples below encompass a whole scenario, but a healthy portion of the messages are entirely optional, and can be omitted in the sense of process optimisation.

The same applies to many of the data elements in messages. If the aim is to reduce the redundancy of data, many elements can be omitted, and messages become much more compact than in the examples below. There also needs to be an awareness that the compactness of messages is also related to security. Resending the same data allows for controls, and increases reliability.

11. Cancellation of transaction

When the initiator of a transaction wants to cancel it, the initial message must be sent again, but with a different document status. It should be noted that the identification of the document should be the same, as it is a precisely determined document or transaction that is being cancelled.

```
<despatchAdvice>
  <creationDateTime>2017-01-03T07:30:00.000</creationDateTime>
```

```
<documentStatusCode>ADDITIONAL_TRANSMISSION</documentStatusCode>
<documentActionCode>DELETE</documentActionCode>
<despatchAdviceIdentification>
```

ORIGINAL is usually entered in the `documentStatusCode` element, while the `documentActionCode` element is usually omitted. In the event of the cancellation of the transaction, the value DELETE is entered here.

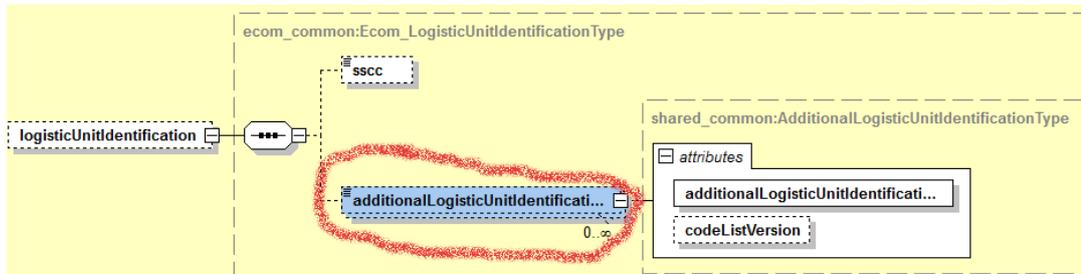
Once the document/message with this status has been sent, the receiver of the message must prevent the further execution of the transaction.

11.1. Reception of unordered/non-standard transport units

For any number of reasons, it can happen that one transport unit has been ordered, but when the carrier arrives, another transport unit is with the party, or even several transport units, none of which has any connection to the ordered unit.

The situation can also arise when a transport unit is designated with a non-standard number (something other than an SSCC).

In each case the carrier must collect the units that are handed over to it by the party. Because the units were unannounced, it is suggested that their identification number not be entered as a formal SSCC, but rather as an additional identification. The missing SSCC element can serve as an indicator to the software that it is a case of the reception of anonymous units.



It is best to use the repeatable element of `additionalLogisticUnitIdentification`, in which the own code can be entered. Here use can be made of the `additionalLogisticUnitIdentificationTypeCode` attribute, in which the following code can be entered:

- GOODS_RECEIVER_ASSIGNED,
- LOGISTICS_SERVICE_PROVIDER_ASSIGNED,
- SHIPPER_ASSIGNED.

12. Identification of components

12.1. Identification of process

One of four possible codes can be entered in the BusinessScope structure, depending on the process in which the message occurs.

```
<sh:BusinessScope>
  <sh:Scope>
    <sh:Type>TransactionType</sh:Type>
    <sh:InstanceIdentifier>LODGEMENT_BANKNOTES</sh:InstanceIdentifier>
  </sh:Scope>
</sh:BusinessScope>
```

The codes are:

- LODGEMENT_BANKNOTES (lodgement of banknotes)
- LODGEMENT_COINS (lodgement of coins)
- WITHDRAWAL_BANKNOTES (withdrawal of banknotes)

- WITHDRAWAL_COINS (withdrawal of coins)
- LODGEMENT (general lodgement)
- WITHDRAWAL (general withdrawal)

These are agreed codes that are used to simplify the processing of electronic messages. According to the agreement, lodgement/withdrawal of banknotes and coins are separated.

12.2. Identification of message type

The message type is an agreed code that denotes what kind of message in the scenario is involved. The following codes are available:

- CASH_ORDER
- NOTIFICATION_OF_DELIVERY
- NOTIFICATION_OF_LODGEMENT
- TRANSPORT_INSTRUCTION
- TRANSPORT_INSTRUCTION_RESPONSE
- CONFIRMATION_OF_RECEIPT
- CONFIRMATION_OF_DESPATCH
- NOTIFICATION_OF_DESPATCH
- CONFIRMATION_OF_DELIVERY
- FINAL_RECEIPT
- SERVICE_MESSAGE
- ORDER_OF_LODGEMENT
- DNT_LODGEMENT

This code is entered in the following structure:

```
<sh:Scope>
  <sh:Type>ProcessType</sh:Type>
  <sh:InstanceIdentifier>NOTIFICATION_OF_LODGEMENT</sh:InstanceIdentifier>
</sh:Scope>
```

These codes are also agreed and aim to simplify the processing of individual messages.

12.3. Identification of message

Each message has its own identification number (*uniqueCreatorIdentification*), which is generated by the sender of the message (*contentOwner*). These two items of data uniquely identify each message or segment within a message.

The identification of a message can be any designation: usually it is some sort of counter used by the issuer of the message. The issuer's duty is to ensure that the designation used is never repeated.

The data pair of *contentOwner* and *uniqueCreatorIdentification* consequently provide for the traceability of individual messages, as they ensure global unrepeatability.

In XML cases (available via links at the end of this document), all identifications are made in the same manner. The sequential number of the document (e.g. A1-001 for the first order, A1-002 for the second order of lodgement, A2-001 for the confirmation of order) is entered in the *uniqueCreatorIdentification* element.

12.4. Identification of transaction

A "transaction" entails the entire process from order to completion, and contains all essential and non-essential messages in the operation. The first message is deemed to be the initial message, and its identification is simultaneously the identification of the whole transaction.

Each message in a single transaction is linked to the first message in some part. This means that the transaction number (the number of the first message) is entered in the relevant data structure of each subsequent message.

The identification of the transaction is entered in different places in different messages, depending on the message, but it is always clear what the individual element is intended for.

The identification of messages consists of the data pair of `entityIdentification` and `contentOwner`. These two items of data from the initial message are entered in subsequent messages in the manner described below:

12.4.1. ID of transaction in *Despatch Advice*

XML element	Value	Remarks
<code>purchaseOrder</code>	A1-001	First code of order of service/transaction
<code>contentOwner</code>	3830034089002	Issuer of identification of initial message

12.4.2. ID of transaction in *Transport Instruction*

XML element	Value	Remarks
<code>transportReference</code>	A1-001	
<code>contentOwner</code>	3830034089002	

12.4.3. ID of transaction in *Receiving Advice*

XML element	Value	Remarks
<code>despatchAdviceIdentification</code>	A1-001	
<code>contentOwner</code>	3830034089002	

12.5. Identification of shipment

A shipment as a group of physical transport units has its own identification number.

The **GSIN** (Global Shipment Identification Number) has been in use since 2010, and is designed for the identification of shipments, i.e. to differentiate between the designation of subordinate transport units and the whole shipment.

The way in which the number is assigned is described in the recommendation for cash logistics, but in brief the identifier has 17 digits (one less than the SSCC), and is created from the GS1 prefix used by the sender firm in the same way as other identifiers.

The GSIN is used in the Transport Instruction, Despatch Advice and Receiving Advice messages. It is first generated in the Transport Instruction, or when the composition of the shipment is determined.

12.6. Hierarchy of packing

The GS1 standards set out the principles for designating lower and higher levels in composite transport units.

Examples of the hierarchy in ordinary transport units:

Unit designated with an SSCC containing	Data in XML	Remarks
1 chocolate (GTIN 1) 2 kg flour (GTIN 2) 10 litres milk (GTIN 3)	<code>quantityOfChildren = 3</code>	Because only different subordinate identification numbers (GTINs) are counted.
5 packets of 10-euro banknotes	<code>quantityOfChildren = 1</code>	One packet of banknotes is only one GTIN
2 packets of 50-euro banknotes 1 bag of 1-euro coins 2 bags of 50-cent coins	<code>quantityOfChildren = 3</code>	The unit contains three different GTINs.

The rule is that each different GTIN counts as one subordinate unit. The quantity of an individual GTIN is stipulated by another element: `quantityContained/Value`. The formal wording with regard to the number of subordinate units is: “*Value indicates the number of unique next lower level trade items contained in a complex trade item. A complex trade item can contain at least two different GTINs.*”

According to the standard, the numbering of the contained units begins anew for each logistics unit (nesting). This means that the contained units are numbered from 1 upwards each time, irrespective of how many logistic units the shipment contains.

12.6.1. Identification of levels of packing (level ID)

The designation of individual levels of packing (`levelIdentification`) allows the physical hierarchy or composition of a shipment to be mapped into an electronic message.

There are several different approaches to describing a shipment (which follows from the GS1 EANCOM - DESDV standard). The following approach applies in cash logistics:

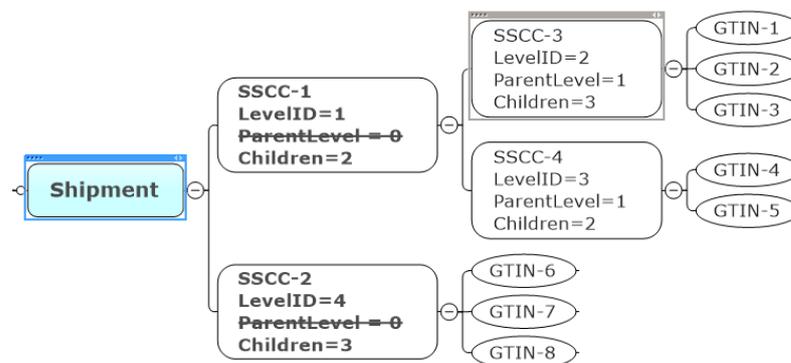


Figure 12—1: Example of structure of shipment and designation of levels

The example shows the structure of a shipment in which there are two logistic units, one of which contains two other logistic units. In this example, the shipment could be a one half europallet (SSCC-1) and one metal container (SSCC-2). The half europallet contains two cardboard boxes marked with SSCC-3 and SSCC-4. Each cardboard box contains a certain number of individual banknotes. The same applies to the metal container (SSCC-2). It should also be noted that a parent level with a level 0 cannot be entered. This means that the `parentLevelIdentification` element in the highest-level transport/logistic unit is not entered at all.

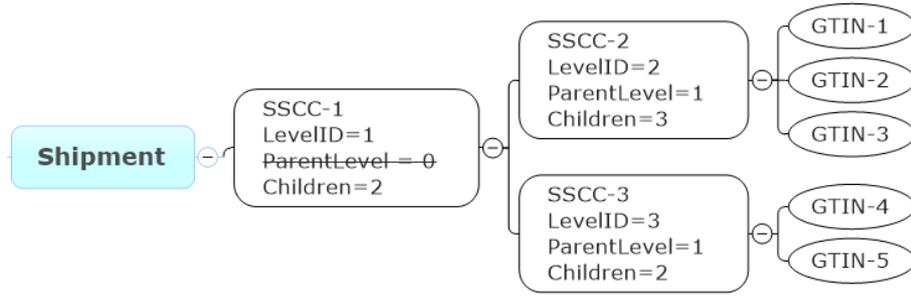


Figure 12—2: Second example of structure of shipment and designation of levels

This second example shows the structure of a shipment in which there is one logistic unit – half europallet, which contains two other logistic units – cardboard boxes. Cardboard boxes are labelled with SSCC-2 and SSCC-3. Each of the cardboard boxes contain some other banknotes.

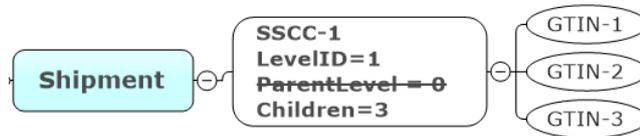


Figure 12—3: Third example of structure of shipment and designation of levels

The simplest example is the shipment of safebag marked with SSCC1, which contains certain amount of individual banknotes.

12.6.2. Subordination: one logistics unit contains another

When several logistic units, cardboard boxes for example, are packed into a single logistics unit, a half europallet for example, it is necessary to use the `quantityOfLogisticUnits` element to state which are the lower-level logistic units.

Using the `levelIdentification` and `parentlevelIdentification` elements, a suitable hierarchy can be established such that it is possible to itemise the message at the receiver.

For example, in the figure for the first example, which illustrates the designation of levels, a partial inventory of the transport units (only for the parent unit [SSCC-1] and the first contained logistic unit [SSCC-3]) is as follows:

```

<!-- 1. Parent transport unit: -->
<despatchAdviceLogisticUnit>
  <levelIdentification>1</levelIdentification>
  <packageTypeCode>CT</packageTypeCode>
  <!-- contains two logistic units SSCC-3 and SSCC-4 -->
  <quantityOfLogisticUnits>2</quantityOfLogisticUnits>
  <!-- Definition of parent logistics unit SSCC-1 -->
  <logisticUnitIdentification>
    <sscc>SSCC 1</sscc>
  </logisticUnitIdentification>
</despatchAdviceLogisticUnit>
<!-- :: -->
<!-- First lower-level transport unit: SSCC 3 -->
<despatchAdviceLogisticUnit>
  <levelIdentification>2</levelIdentification>
  <parentLevelIdentification>1</parentLevelIdentification>
  <packageTypeCode>BG</packageTypeCode>
  <quantityOfChildren>3</quantityOfChildren>
  <logisticUnitIdentification>
    <!-- SSCC of lower-level unit: -->
    <sscc>SSCC 3</sscc>
  </logisticUnitIdentification>
  <!-- 1st contained unit in SSCC 3-->
  <despatchAdviceLineItem>
    <lineItemNumber>1</lineItemNumber>
  </despatchAdviceLineItem>
</despatchAdviceLogisticUnit>

```

```

    <transactionalTradeltem>
      <gtin>GTIN 1</gtin>
    </transactionalTradeltem>
  </despatchAdviceLineItem>
  <!-- 2nd contained unit-->
  <despatchAdviceLineItem>
    <lineItemNumber>2</lineItemNumber>
    <transactionalTradeltem>
      <gtin>GTIN 2</gtin>
    </transactionalTradeltem>
  </despatchAdviceLineItem>
  <!-- 3rd contained unit-->
  <despatchAdviceLineItem>
    <lineItemNumber>3</lineItemNumber>
    <transactionalTradeltem>
      <gtin>GTIN 3</gtin>
    </transactionalTradeltem>
  </despatchAdviceLineItem>
</despatchAdviceLogisticUnit>

```

12.6.3. Types of packing

The coding system for the type of packing contains codes such as the following (the codes used at the Bank of Slovenia are shown in bold):

- **SA** Sack
- **BG** Bag / Safebag
- **CT** Carton / Carton box / Card board box
- **ID** Package, display, metal (metal crate)
- **NE** Unpacked or unpackage (open packaging)
- **201** Pallet
- **200** Half pallet
- **BX** **Box**
- 4B Box, aluminium
- 4G Box, fibreboard
- BE Bundle
- CA Cassette
- CS Case
- CO Container
- SU Suitcase

The code of the type of packing is entered in the `packageTypeCode` element.

12.7. Identification of services

Services are items in electronic messages used as the basis for the invoicing of the transaction. Consequently services must also be designated with an identification number (GTIN). The following services are used currently:

Service	GTIN
DECS Lodgement	4107001000056
DECS Withdrawal	4107001000063
<i>Lodgement of Euro banknotes - immediate credit</i>	4107001000070
<i>Lodgement of Euro coins - immediate credit</i>	4107001000094
<i>Withdrawal of Euro banknotes</i>	4107001000117

Service	GTIN
Withdrawal of Euro coins	4107001000124

It is to be expected that the services will expand further; new codes will most likely be stipulated by the ECB, and possibly also by the Bank of Slovenia. In any case they must be known by all the partners involved, otherwise there could be the use of an unknown code in processing.

12.7.1. Entry of services

Services are designated by a GTIN in the same way as physical units, the difference of course being that a service is not part of the physical flow of goods.

There is no need for the entry of services when the business relationship between the partners is clear, or an appropriate agreement or contractual relationship is in place.

The typical service is "lodgement", the accounting of which of course depends on quantity.

Services are part of the transaction from the very start, which means they are entered during the order itself. In addition to the cash that it is depositing or withdrawing, the party also communicates the corresponding services codes to the bank. Services may pertain to any physical item or transport unit.

For example, in a notification of lodgement, the record could be as follows:

```

<!-- 1. Transportna enota: -->
<despatchAdviceLogisticUnit>
  <logisticUnitIdentification>
    <!-- SSCC za prvo vrečko: -->
    <sscc>33838438000000464</sscc>
  </logisticUnitIdentification>
  <despatchAdviceLineItem>
    <lineItemNumber>1</lineItemNumber>
    <despatchedQuantity measurementUnitCode="EA">5</despatchedQuantity>
    <transactionalTradeItem>
      <!-- GTIN za snop bankovcev za 100 EUR: -->
      <gtin>04107001000056</gtin>
    </transactionalTradeItem>
  </despatchAdviceLineItem>
  <!-- Druga vrstica pri transportni enoti je postavka za storitev - POLOG -->
  <despatchAdviceLineItem>
    <lineItemNumber>2</lineItemNumber>
    <despatchedQuantity measurementUnitCode="EUR">50000.00</despatchedQuantity>
    <transactionalTradeItem>
      <!-- GTIN za storitev štetja: -->
      <gtin>04107001002456</gtin>
    </transactionalTradeItem>
  </despatchAdviceLineItem>
</despatchAdviceLogisticUnit>

```

Figure 12—4: Entry of services alongside physical item

The green box stipulates the physical unit (packet of banknotes), while the corresponding services are entered in the next item (the red box).

When there are several items in a logistic unit that are subject to the same service, the quantity for the service is equal to the sum of all other quantities. In other words: **the same service is not repeated within a single logistic unit.**

In the example of the above hierarchy of packing, the services could be ascribed as follows:

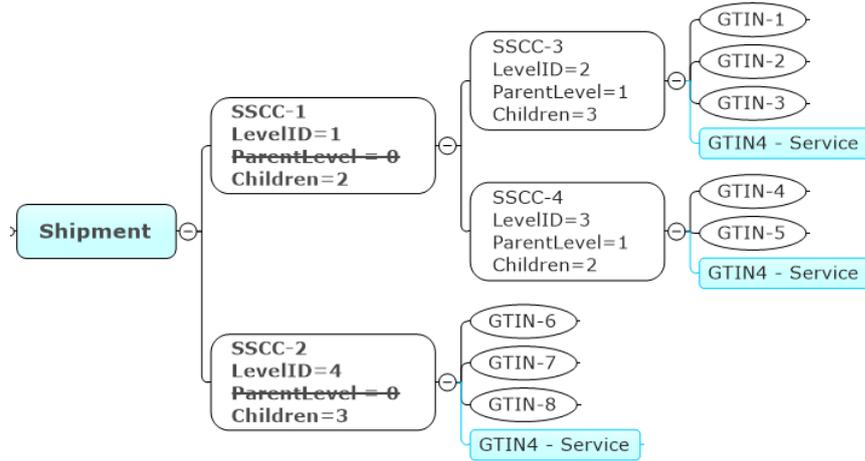


Figure 12—5: Additional service placement

In all three cases it is the same service (for example: lodgement), which is adjusted separately to each transport unit. The value is the ascribed value of the entire unit, or the sum of all other lower-level units.

13. Components of messages

13.1. Total value of shipment (checksum)

In the schemes for *Despatch Advice* and *Receiving Advice* messages, the structure in which the total value of the shipment is entered is as follows:

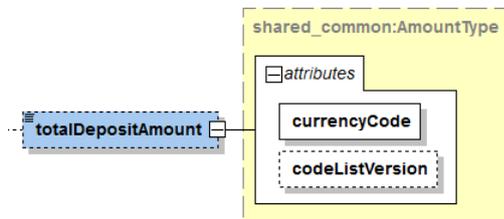


Figure 13—1: Structure for total amount of shipment

13.2. Control quantities in final receipt report

In the report on a lodgement (FINAL_RECEIPT), data about the total quantity of the lodgement must be sent to the party.

The AVP structure is used for this purpose:

```
<avpList>
  <eComStringAttributeValuePairList
    attributeName="NotifiedLodgement">100000.00</eComStringAttributeValuePairList>
  <eComStringAttributeValuePairList
    attributeName="ReceivedLodgement">100000.00</eComStringAttributeValuePairList>
</avpList>
```

The ordered quantity is stated in the *NotifiedLodgement* field, while the received quantity is stated in the *ReceivedLodgement* field. A discrepancy may arise because of errors, or possible suspect denominations.

13.3. Sending of bank account and reference

In certain cases the sender is required to send a bank account and reference into which the lodgement is to be executed or the payment for provided services is to be paid.

Each element that describes the parties to the transaction (the `TransactionalPartyType` element) also contains a structure for the description of banking information, as in *Despatch Advice* and *Receiving Advice* messages:

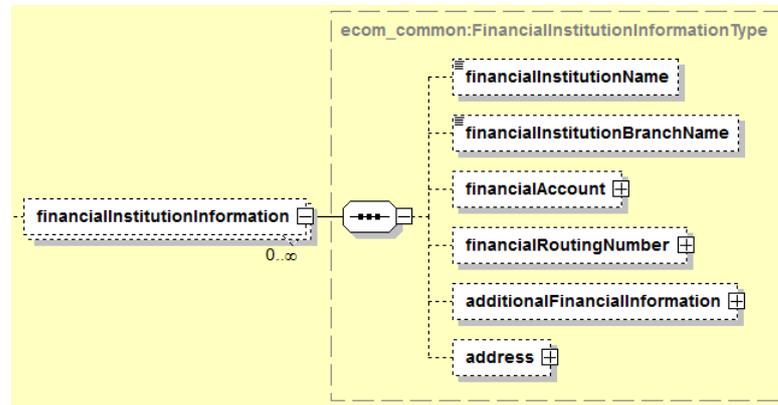


Figure 13—2: Structure for banking information

For example:

```
<shipper>
  <gln>3830034089002</gln>
  <financialInstitutionInformation>
    <financialInstitutionName>Grand GS1 Bank</financialInstitutionName>
    <financialAccount>
      <financialAccountNumber>123456-789-012</financialAccountNumber>
      <financialAccountNumberTypeCode>567-890</financialAccountNumberTypeCode>
    </financialAccount>
  </financialInstitutionInformation>
</shipper>
```

The same structure exists for each type of partner in the message, not only the shipper, and may be completed on each occasion or at any time.

14. Service message (ARA)

The service message or *Application Receipt and Acknowledgement* is a method by which the receiver of the message informs the sender that a specific message has been received or rejected.

! In general **each sent message is followed by a service message.**

There can be several reasons for the possible rejection of messages, but in principle it is because the message could not be recognised (in part or in full).

The service message provides for greater reliability in the functioning of the entire system, as it provides an assurance that sent messages have actually been received.

15. Use of electronic signature

For security reasons it is advisable to use an electronic signature in the majority of messages in the logistics process. GS1 logistic messages are generally used in the ordinary environment of supply chains, when there is no need for this form of protection, for which reason an electronic signature is not built into the electronic message scheme.

GS1 Slovenia's proposal is that the extension element, which is present in all schemes, be used for the electronic signature (until the arrival of the next generation of schemes with inbuilt signature).

An electronic signature is built in by adding `xmlns:ds="http://www.w3.org/2000/09/xmldsig#"` to the XML document header, in the namespace list.

For example:

```
<despatch_advice:despatchAdviceMessage
xmlns:despatch_advice="urn:gs1:ecom:despatch_advice:xsd:3"
xmlns:sh="http://www.unece.org/cefact/namespaces/StandardBusinessDocumentHeader"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:gs1:ecom:despatch_advice:xsd:3
http://www.gs1si.org/BMS/DespatchAdviceCASH_3-3/Schemas/g1/ecom/DespatchAdvice.xsd"
xmlns:ds="http://www.w3.org/2000/09/xmldsig#">
```

Then the signature is inserted into the `extension` element in the message. All schemes used in cash logistics have this element included.

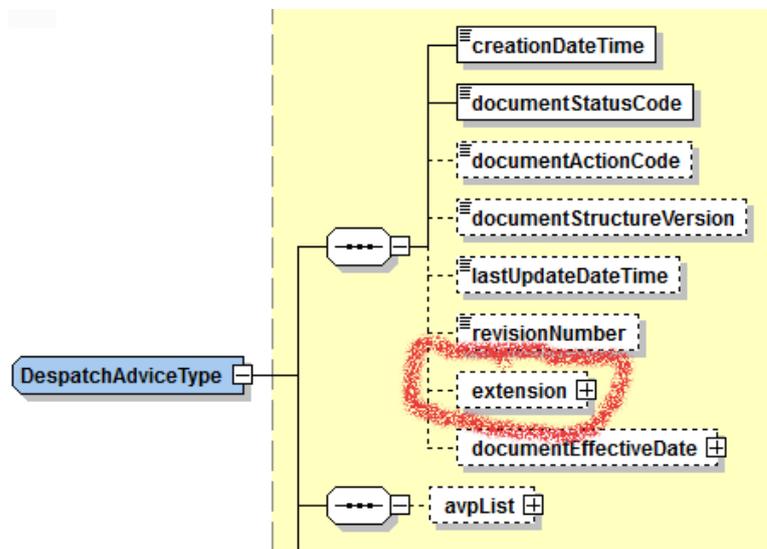


Figure 15—1: Element in scheme for in-building of electronic signature

For example:

```
<extension>
  <ds:Signature>
    <ds:SignedInfo>
      <ds:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <ds:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#dsa-sha1"/>
      <ds:Reference URI="http://primer.si">
        <ds:Transforms>
          <ds:Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature"/>
        </ds:Transforms>
        <ds:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
        <ds:DigestValue>UjBsR09EbGhjZ0dTQUxNQUFBUUNBRU1tQ1p0dU1GUXhEUzhi</ds:DigestValue>
      </ds:Reference>
    </ds:SignedInfo>
    <ds:SignatureValue>UjBsR09EbGhjZ0dTQUxNQUFBUUNBRU1tQ1p0dU1GUXhEUzhi</ds:SignatureValue>
  </ds:Signature>
  <ds:KeyInfo>
    <ds:KeyValue>
      <ds:DSAKeyValue>
        <ds:P>UjBsR09EbGhjZ0dTQUxNQUFBUUNBRU1tQ1p0dU1GUXhEUzhi</ds:P>
        <ds:Q>UjBsR09EbGhjZ0dTQUxNQUFBUUNBRU1tQ1p0dU1GUXhEUzhi</ds:Q>
        <ds:G>UjBsR09EbGhjZ0dTQUxNQUFBUUNBRU1tQ1p0dU1GUXhEUzhi</ds:G>
        <ds:Y>UjBsR09EbGhjZ0dTQUxNQUFBUUNBRU1tQ1p0dU1GUXhEUzhi</ds:Y>
        <ds:J>UjBsR09EbGhjZ0dTQUxNQUFBUUNBRU1tQ1p0dU1GUXhEUzhi</ds:J>
        <ds:Seed>UjBsR09EbGhjZ0dTQUxNQUFBUUNBRU1tQ1p0dU1GUXhEUzhi</ds:Seed>
      </ds:DSAKeyValue>
    </ds:KeyValue>
  </ds:KeyInfo>
</extension>
```

```
<ds:PgenCounter>UjBsR09EbGhjZ0dTQUxNQUFBUUNBRU1tQ1p0dU1GUXhEUzhi</ds:PgenCounter>  
</ds:DSAKeyValue>  
</ds:KeyValue>  
<ds:X509Data>  
<ds:X509Certificate>UjBsR09EbGhjZ0dTQUxNQUFBUUNBRU1tQ1p0dU1GUXhEUzhi</ds:X509Certificate>  
</ds:X509Data>  
</ds:KeyInfo>  
</ds:Signature>  
</extension>
```

III. Example of scenario for lodgement

16. Scenario A

This scenario relates to the process described in the Recommendations for cash logistics¹ document and the pertaining scenario document. All messages are cited in the below scenario, although in practice only four are mandatory.

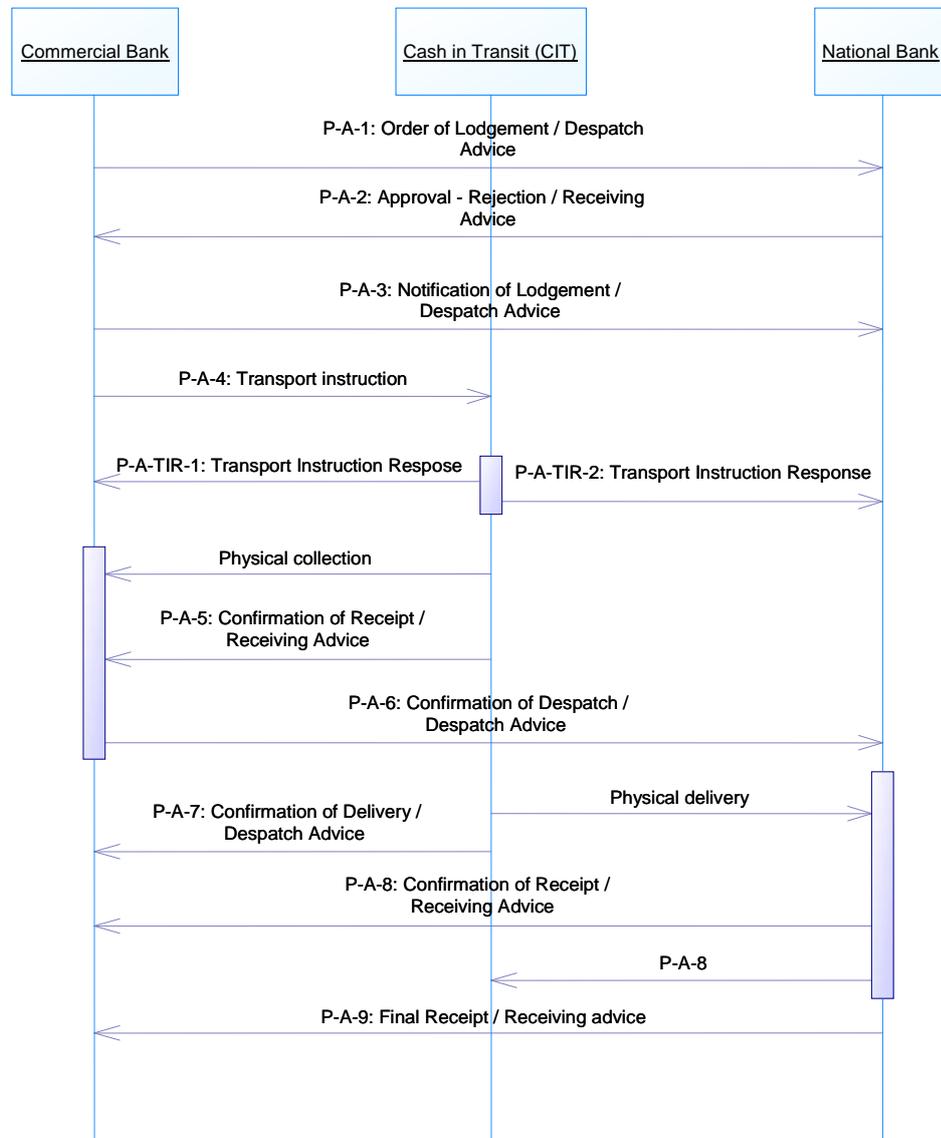


Figure 16—1: Party makes cash lodgement

- P-A-1: The procedure begins with an order of lodgement (quantities and denominations) with an *Order of Lodgement* message (optional).
- P-A-2: An optional service message provides for the order of lodgement to be approved or rejected.
- P-A-3: When the shipment is ready for despatch, i.e. when the identification numbers are also known, the transport units and corresponding SSCC identifiers are formulated, and a *Notification of Lodgement* is sent to the Bank of Slovenia.
- P-A-4: The orderer of the transport communicates the transport instructions to the CIT firm. In this case the orderer is the commercial bank / party or the Bank of Slovenia. The only important thing is that the transport instructions is sent to the CIT firm.
- P-A-TIR-1: CIT firm confirms that he received Transport Instruction and informs the ordering party about the type of vehicle and its crew, which will collect the shipment.

- P-A-TIR-2: CIT firm can send a message about arrival to the receiving party, informing them about the time, vehicle and the crew.
- P-A-5: When the CIT firm picks up the shipment confirmation of receipt is created, and the identification numbers of the picked-up shipments are entered. The CIT firm sends the message to the commercial bank (the orderer of the transaction). This message is optional, and may be used to inform both parties.
- P-A-6: After the pick-up, the orderer of the service (the commercial bank / party) informs the Bank of Slovenia that the shipment is en route (*Confirmation of Despatch*).
- P-A-7: When the CIT firm delivers the transport units to the Bank of Slovenia's reception point, it sends a *Confirmation of Delivery* to the orderer (the commercial bank).
- P-A-8: The Bank of Slovenia confirms receipt of the lodgement with a *Confirmation of Receipt* message. This message can also be obtained optionally by the CIT firm.
- P-A-9: After the cash is processed, the Bank of Slovenia sends a *Final Receipt* report, thereby completing the transaction.

Message	Mandatory?	Code	GS1 message
P-A-1		ORDER_OF_LODGEMENT	<i>Despatch Advice</i>
P-A-2		APPROVAL or REJECTION	<i>Receiving Advice</i>
P-A-3	X	NOTIFICATION_OF_LODGEMENT	<i>Despatch Advice</i>
P-A-4	X	TRANSPORT_INSTRUCTION	<i>Transport Instruction</i>
P-A-TIR-1		TRANSPORT_INSTRUCTION_RESPONSE	<i>Transport Instruction Response</i>
P-A-TIR-2		TRANSPORT_INSTRUCTION_RESPONSE	<i>Transport Instruction Response</i>
P-A-5		CONFIRMATION_OF_RECEIPT	<i>Receiving Advice</i>
P-A-6		CONFIRMATION_OF_DESPATCH	<i>Despatch Advice</i>
P-A-7		CONFIRMATION_OF_DELIVERY	<i>Despatch Advice</i>
P-A-8	X	CONFIRMATION_OF_RECEIPT	<i>Receiving Advice</i>
P-A-9	X	FINAL_RECEIPT	<i>Receiving Advice</i>

Each message in the above table must be followed in communications by an ARA service message, which informs the sender's counterparty that the message has been received and understood and is being processed.

16.1. Test scenario

A commercial bank (Bank B) orders a lodgement of EUR 100,000 with the central bank (Bank of Slovenia).

The banknotes are stored in two plastic bags, a transport unit designated with an SSCC. The first contains five packets of 100 100-euro banknotes (EUR 50,000), while the second contains ten packets of 100 50-euro banknotes (EUR 50,000). The recording of the quantity refers to items (the number of individual banknotes).

The client wants a scheduled delivery time and date of 1.45 pm on 4 January 2017, where pick-up should be at 7 pm on 3 January 2017.

The shipment needs to be picked up at the party at the commercial bank's registered office, and delivered to the cash centre of the receiver (central bank).

Final receipt is sent two days after cash has been received.

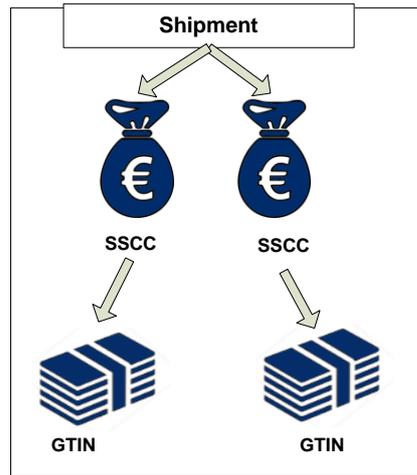


Figure 16—2: Composition of shipment

The shipment consists of two bags, each designated with its own SSCC. Each bag contains banknotes.

The shipment has a single hierarchical level of logistic units, and it is therefore not necessary to enter the hierarchy of levels. Had there been another logistic unit in one bag or strongbox (designated with an SSCC), there would be two levels, which would be appropriately designated in the *levelIdentification* element in the message. The shipment hierarchy would also be applied had there been a logical connection between shipments (higher-level and lower-level SSCCs, e.g. a crate inside a crate, in which there is a bag).

16.2. Links to XML files

Document (message)	Link
P-A-1	http://www.gs1si.org/cashEdi/XML/3.3/A/A-1-OrderOfLodgement.xml
ARA	http://www.gs1si.org/cashEdi/XML/3.3/A/A-1-OrderOfLodgement-ARA.xml
P-A-2	http://www.gs1si.org/cashEdi/XML/3.3/A/A-2-Approval-Rejection-RecAdv.xml
P-A-3	http://www.gs1si.org/cashEdi/XML/3.3/A/A-3-NotificationOfLodgment.xml
P-A-4	http://www.gs1si.org/cashEdi/XML/3.3/A/A-4-TransportInstruction.xml
P-A-TIR-1	http://www.gs1si.org/cashEdi/XML/3.3/A/A-Tir-1.xml
P-A-TIR-2	http://www.gs1si.org/cashEdi/XML/3.3/A/A-Tir-2.xml
P-A-5	http://www.gs1si.org/cashEdi/XML/3.3/A/A-5-ConfirmationOfReceipt.xml
P-A-5 short	http://www.gs1si.org/cashEdi/XML/3.3/A/A-5-ConfirmationOfReceipt-SHORT.xml
P-A-6	http://www.gs1si.org/cashEdi/XML/3.3/A/A-6-ConfirmationOfDespatch.xml
P-A-6 short	http://www.gs1si.org/cashEdi/XML/3.3/A/A-6-ConfirmationOfDespatch-SHORT.xml
P-A-7	http://www.gs1si.org/cashEdi/XML/3.3/A/A-7-ConfirmationOfDelivery.xml
P-A-8	http://www.gs1si.org/cashEdi/XML/3.3/A/A-8-ConfirmationOfReceipt.xml
P-A-8 short	http://www.gs1si.org/cashEdi/XML/3.3/A/A-8-ConfirmationOfReceipt-SHORT.xml
P-A-9	http://www.gs1si.org/cashEdi/XML/3.3/A/A-9-FinalReceipt.xml

IV. Example of scenario for withdrawal

17. Scenario B: withdrawal at the central bank

This scenario relates to the process described in the *Recommendations for cash logistics*¹ document and the pertaining scenario document. All messages are cited in the below scenario, although in practice only some are mandatory.

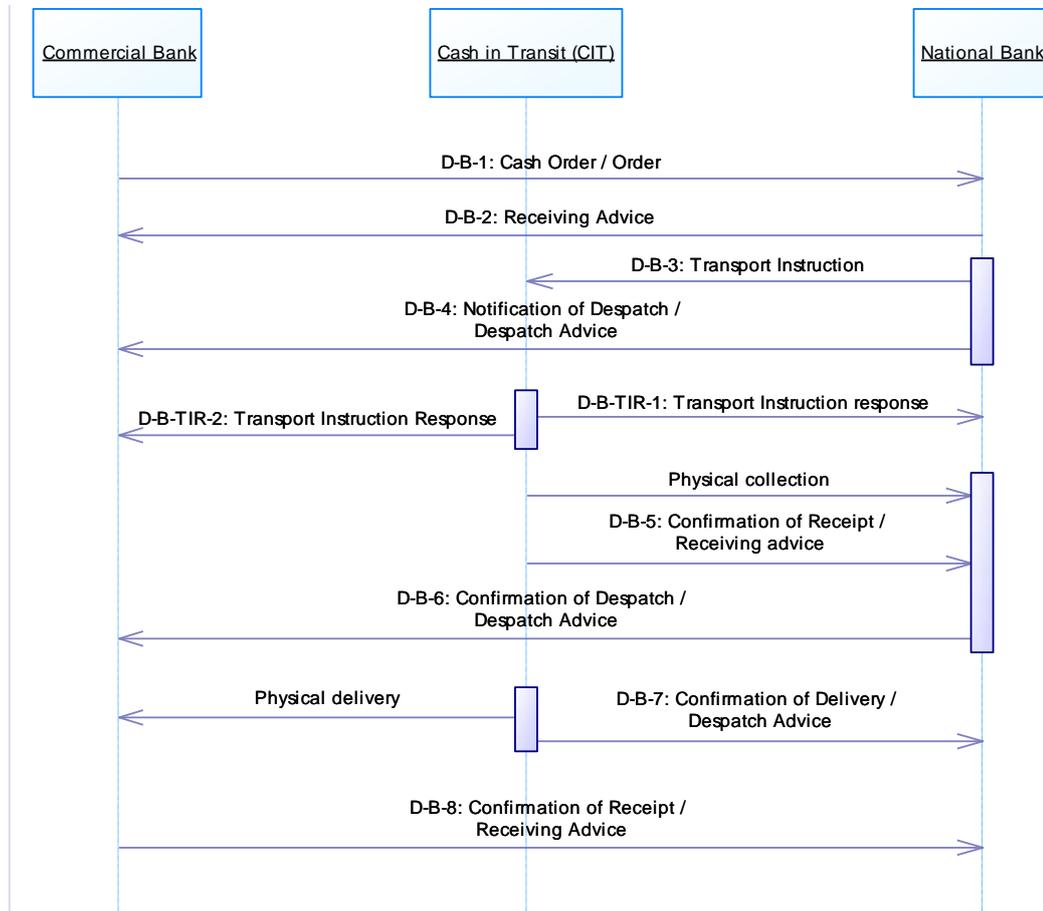


Figure 17—1: Withdrawal at the central bank

- D-B-1: The process begins with an order for the withdrawal of cash, which contains a specification of the denominations and quantities (*Cash Order* message).
- D-B-2: The Bank of Slovenia approves or rejects the order via a message where the status of APPROVAL or REJECTION is entered.
- D-B-3: The CIT firm receives the transport instructions from one of the partners, either the Bank of Slovenia or the commercial bank / party. The transport instructions contain identifiers of the individual transport units (*Transport Instruction*).
- D-B-4: The Bank of Slovenia prepares the transport units. When they are ready, it notifies the commercial bank / party (receiver) via a *Notification of Despatch* message.
- D-B-TIR-1: CIT firm can confirm that they received Transport Instruction and inform the ordering party about the type of vehicle and its crew, which will collect the shipment.
- D-B-TIR-2: CIT firm can send a message about arrival to the receiving party, informing them about the time, vehicle and the crew.
- D-B-5: When the CIT firm picks up the shipment, a confirmation of receipt is sent to the Bank of Slovenia (the orderer of the transport services).
- D-B-6: Via a *Confirmation of Despatch*, the Bank of Slovenia informs the commercial bank / party that the shipment has been handed over to the CIT firm.

- D-B-7: After the delivery of the transport units, the CIT firm sends a confirmation of delivery to the orderer of the transport. The same confirmation may also be sent to the receiver of the transport units.
- D-B-8: After receiving the transport units, the commercial bank / party sends the Bank of Slovenia a *Confirmation of Receipt*. The same confirmation may also be sent to the CIT firm, if so agreed.

Message	Mandatory?	Code	GS1 message
D-B-1	X	CASH_ORDER	<i>Order</i>
D-B-2		APPROVAL or REJECTION	<i>Receiving Advice</i>
D-B-3	X	TRANSPORT_INSTRUCTION	<i>Transport Instruction</i>
D-B-4	X	NOTIFICATION_OF_DESPATCH	<i>Despatch Advice</i>
D-B-TIR-1		TRANSPORT_INSTRUCTION_RESPONSE	<i>Transport Instruction Response</i>
D-B-TIR-2		TRANSPORT_INSTRUCTION_RESPONSE	<i>Transport Instruction Response</i>
D-B-5		CONFIRMATION_OF_RECEIPT	<i>Receiving Advice</i>
D-B-6	X	CONFIRMATION_OF_DESPATCH	<i>Despatch Advice</i>
D-B-7		CONFIRMATION_OF_DELIVERY	<i>Despatch Advice</i>
D-B-8		CONFIRMATION_OF_RECEIPT	<i>Receiving Advice</i>

Each message in the above table must be followed in communications by an ARA service message, which informs the sender's counterparty that the message has been received and understood and is being processed.

The withdrawal of banknotes and coins is undertaken separately.

17.1. Test scenario

A commercial bank (Bank B) orders a withdrawal in the total amount of EUR 440,000 banknotes from the central bank (Bank of Slovenia).

The banknotes are to comprise 2,000 20-euro banknotes and 4,000 100-euro banknotes.

The party wants a scheduled delivery time and date of 8 am on 21 April 2017 at the warehouse.

The order is made out for individual banknotes, but the transport units contains higher levels of packing (packets of 100 banknotes), which are in three different bags, each of 20 packets.

Everything is packed together in a metal container (identified by a GRAI), which is also returnable packaging.

Despatch from the Bank of Slovenia cash centre is scheduled for 7 am on 21 April 2017.

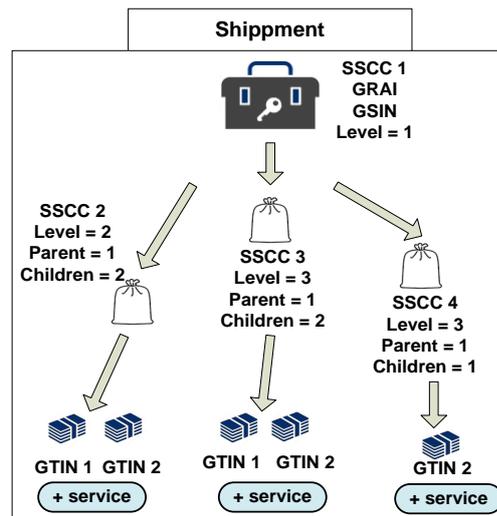


Figure 17—2: Structure of shipment

17.2. Links to XML files

Document (message)	Link
D-B-1	http://www.gs1si.org/cashEdi/XML/3.3/B/B-1-Order.xml
ARA	http://www.gs1si.org/cashEdi/XML/3.3/B/B-1-Order-ARA.xml
D-B-2	http://www.gs1si.org/cashEdi/XML/3.3/B/B-2-Approval-Rejection-RecAdv.xml
D-B-3	http://www.gs1si.org/cashEdi/XML/3.3/B/B-3-TransportInstruction.xml
D-B-4	http://www.gs1si.org/cashEdi/XML/3.3/B/B-4-NotificationOfDespatch.xml
D-B-TIR-1	http://www.gs1si.org/cashEdi/XML/3.3/B/B-Tir-1.xml
D-B-TIR-2	http://www.gs1si.org/cashEdi/XML/3.3/B/B-Tir-2.xml
D-B-5	http://www.gs1si.org/cashEdi/XML/3.3/B/B-5-ConfirmationOfReceipt.xml
D-B-5 short	http://www.gs1si.org/cashEdi/XML/3.3/B/B-5-ConfirmationOfReceipt-SHORT.xml
D-B-6	http://www.gs1si.org/cashEdi/XML/3.3/B/B-6-ConfirmationOfDespatch.xml
D-B-6 short	http://www.gs1si.org/cashEdi/XML/3.3/B/B-6-ConfirmationOfDespatch-SHORT.xml
D-B-7	http://www.gs1si.org/cashEdi/XML/3.3/B/B-7-ConfirmationOfDelivery.xml
D-B-8	http://www.gs1si.org/cashEdi/XML/3.3/B/B-8-ConfirmationOfReceipt.xml
D-B-8 short	http://www.gs1si.org/cashEdi/XML/3.3/B/B-8-ConfirmationOfReceipt-SHORT.xml

18. Other scenarios

The scenarios comprise various procedures in cash logistics, with multiple variations, depending on the business processes of the individual users. There is no end to the possible processes that can be listed and worked through, but the principle of using electronic messages is very similar in all variants.

Other scenarios are also elaborated in the recommendations:

- C: Client makes cash lodgement at commercial bank

- D: Client orders cash at commercial bank
- E: Client deposits cash in cash deposit machine
- F: CIT company picks up units at client and delivers them to cash deposit machine
- G: Bank unit orders cash at bank headquarters
- H: Bank unit sends cash to bank headquarters

A more precise description of the processes in these scenarios is given in a separate document.

19. Links

Reference	Description	Link
1	Main document of recommendations for cash logistics for the Bank of Slovenia - commercial bank process (in Slovene only)	http://www.gs1si.org/cashEdi/Doc/LogistikaGotovine-Priporocila.pdf
2	Examples of GS1 - XML 3.3 messages (Common definitions, in Slovene only)	http://www.gs1si.org/cashEdi/Doc/LogistikaGotovine-XML-SkupneDefinicije.pdf
3	Recommendations for cash logistics for the commercial bank - customer process (in Slovene only)	http://www.gs1si.org/cashEdi/Doc/LogistikaGotovine-PriporocilaPoslovneBanke.pdf
4	Identification numbers for various qualities and denominations of banknotes and coins and for various services in cash logistics	http://www.bundesbank.de/Redaktion/EN/Documentation/CBUSERGROUP/HtmlDoc/publications/GTINs_ECB_V1.6.pdf
5	Brochure on the use of GLNs	http://www.gs1si.org/Portals/0/GS1_Dokumentacija/GS1_Publikacije/Brosure_GS1_SLO/brosura_GLN_2016.pdf?ver=2016-12-12-133157-080
6	Cash logistics: GS1 SI	www.gs1si.org/GS1-v-praksi/Banke/Logistika-gotovine
7	CashEDI in Slovenia	https://www.bsi.si/en/banknotes-and-coins/cash-professionals/cashedi
8	Additional information about GTIN	https://www.gs1.org/standards/id-keys/gtin
9	Additional information about GLN	https://www.gs1.org/standards/id-keys/gln
10	Additional information about SSCC	https://www.gs1.org/standards/id-keys/sscc
11	Additional information about GSRN	https://www.gs1.org/standards/id-keys/global-service-relation-number-gsrn
12	Additional information about GRAI	https://www.gs1.org/standards/id-keys/grai
13	Additional information about GIAI	https://www.gs1.org/standards/id-keys/global-individual-asset-identifier-giai
14	Additional information about GSIN	https://www.gs1.org/standards/id-keys/global-shipment-identification-number-gsin
15	Additional information about GINC	https://www.gs1.org/standards/id-keys/global-identification-number-consignment-ginc
16	Bank of Slovenia (Slovenian central bank)	www.bsi.si
17	GS1 global user manual	http://www.gs1si.org/gum
18	Specification of <i>Transport Instruction</i> 3.3 message for cash logistics	http://www.gs1si.org/bms/Dokumentacija/BMS-MIG_TransportInstruction_3-3.pdf
19	GS1 XML on GS1 Slovenia website	http://www.gs1si.org/GS1-XML
20	GS1 XML on GS1 central website	http://www.gs1.org/gs1-xml/latest
21	Specifications of CashEDI system	http://www.gs1si.org/CashEDI/DataStructure/index.htm
22	CashEDI in Germany	http://www.bundesbank.de/Navigation/EN/Tasks/Cash_management/CashEDI/cashedi.html
23	GS1 General specifications	http://www.gs1.org/barcodes-epcrid-id-keys/gs1-general-specifications

Reference	Description	Link
24	Explanation of SSCC	http://www.gs1si.org/SSCC
25	User group for GS1 standards at ECB	http://www.bundesbank.de/Redaktion/EN/Documentation/CBUSERGROUP/HtmlDoc/index.html
26	GS1-128 symbology	http://www.gs1si.org/Standardi/Zajem/GS1-128
27	EAN-13 symbology	http://www.gs1si.org/EAN
28	Basics of traceability	http://www.gs1si.org/GS1-v-praksi/Proizvodnja-Trgovina/Sledljivost
29	Application identifiers	http://www.gs1si.org/Standardi-GS1/Identifikacija/Aplikacijski-identifikatorji
30	GS1 Germany web tool for review of documentation on CashEDI for GS1 XML 2.*	http://www.gs1si.org/CashEDI/DataStructure/index.htm
31	GS1 EPCIS standard	http://www.gs1si.org/EPCIS
32	International database of GS1 firms (GEPiR)	www.gepir.org
33	Description of GTIN key	www.gs1si.org/GTIN
34	Calculator of GS1 check digit	www.gs1si.org/Kalkulator-kontrolne-cifre
35	GS1 global data dictionary (3.3)	http://apps.gs1.org/GDD/bms/Version3_3/
36	Definition of GLN	http://www.gs1si.org/GLN
37	Definition of GRAI	http://www.gs1.org/grai
38	Ties between WCO/UCR and GS1	http://www.wcoomd.org/en/media/newsroom/2013/february/cooperation-between-wco-and-gs1.aspx
39	ECB Guideline on the data exchange for cash services (DECS)	https://www.ecb.europa.eu/ecb/legal/pdf/l_24520120911_sl00030012.pdf
40	Document on cash logistics drawn up by GS1 Germany	http://www.gs1si.org/CashEDI/Doc/use_gs1_standards_to_organize_cash_handling_and_atm_processes.pdf
41	Slovenian brochure on cash logistics	http://www.gs1si.org/CashEDI/Doc/Brosura-CashEDI.pdf
42	Brochure on use of GS1 GSIN key	http://www.gs1si.org/CashEDI/Doc/GSIN_Intro.pdf
43	Definition of SBDH header in XML documents	http://www.gs1.org/docs/gsm/xml/sbdh/SBDH_v1_3_Technical_Implementation_Guide.pdf