

Work Request Form

1. Request/Submitter Information

Submitter: GS1 Slovenia

Intent:

- Improving logistics processes connected to heterogenous/mixed pallets operations (receiving, shipping, ...)
- Mixed pallets are accompanied with paper documents (e.g.: packing lists) containing list of items.
- Enhancing these existing paper documents to include standardized 2D barcodes with content encoded.

2. Legal and Regulatory Compliance

No regulatory compliances.

3. Problem statement and business impact

Describe the business problem and impact on business processes, products and/or product categories.

We are trying to solve the situation when data about the contents of a mixed pallet arrives only on the paper documents accompanying the pallets (e.g.: packing list, bill of landing, certificate of origin, other. There are no global standards because of different local legal requirements).

Packing list are made for all shipments consisting of more than one shipping piece for the following reasons: they aid in identifying lost cargo, especially for carrier and insurance claims, they permit selective inspection by customs authorities, and many governments require them for large shipments, they provide a "map" of the shipment, enabling the buyer to easily unpack and stock the shipped goods.

This work request is limited to situations where parties involved are unable or unwilling to use EDI messages (namely Despatch Advice – DESADV) to send the data about the pallet including the content and are delivering mixed pallets.

Most common reasons for the parties not sending EDI DESADV are:

- They do not have the necessary EDI infrastructure or software to generate and send DESADV messages to their customers or logistics partners. They may rely on manual or paper-based processes to communicate delivery and shipment information.
- They do not have the agreement or requirement from their customers or logistics partners to use DESADV messages. They may use other methods or formats to exchange delivery and shipment information, such as email, fax, phone, or web portals.
- Backoffice systems (ERP, ...) of supplier are not able to store or gather necessary data to generate DESADV message.

Definition of mixed pallet: pallet containing multiple different items. Items with different GTINs and/or other key qualifiers like LOT, ... and/or other attributes like BEST BEFORE, ...

There are a few options/scenarios when using mixed pallets

1. Pallet contains multiple different trade items scanned in general retail POS and not in general distribution. Barcodes EAN/UPC on trade items are scanned containing GTIN and additional data attributes (LOT, BEST BEFORE, ...) are manually entered (keyed in).
2. Pallet contains multiple different trade items scanned in general distribution only.
 - a. Barcodes EAN/UPC/ITF on trade items are scanned containing GTIN and additional data attributes (LOT, BEST BEFORE, ...) are manually entered (keyed in),
 - b. Barcodes GS1-128 on items are scanned containing GTIN and additional data attributes (LOT, BEST BEFORE, ...).
3. Pallet contains multiple small logistic units scanned in general distribution.
 - a. Barcodes GS1-128 on small logistic units are scanned containing SSCC, GTIN and additional data attributes (LOT, BEST BEFORE, ...
4. Combination of previous scenarios.

In FMCG sector common scenario is this one (known also as sandwich pallet):

Entire pallet is marked with logistic label containing only SSCC and each sub-pallet (level) has its own logistic label containing it's SSCC and describing the contents of this level (GTIN, LOT, BEST BEFORE, ...). Levels have different GTINs or Best Before or LOT.

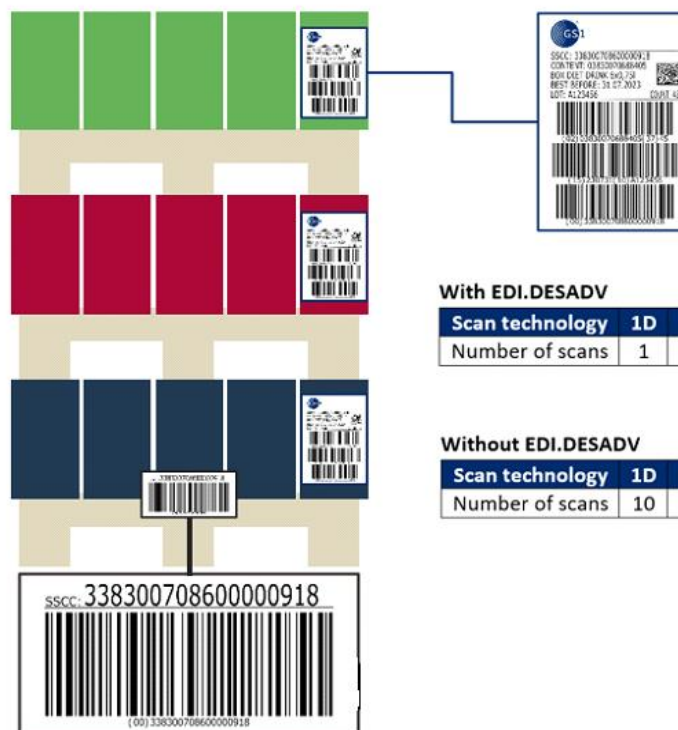
When receiving such pallet, each barcode has to be scanned individually.

In this example there are 10 scans needed for three levels, that is 3 for each separate level and one for the whole pallet.

Scanning so many barcodes is time consuming.

In case of using and scanning 2D code on each logistic label (standardised in Gen. Spec since 2019) instead of scanning 3x GS1-128 barcodes on each level, there would be total 4 scans.

This work request is about scanning another, new 2D barcode on the separate document (e.g.: pack list), containing the complete list of contents, that is ONE scan!



Handling such pallets causes lot of manual work since entering the traceability data is often demanded by law, especially in the GS1 core sector FMCG.

There are also other scenarios where all data from each item on a mixed pallet with a different LOT and 'BEST BEFORE' date must be entered manually, introducing the risk of data entry errors as well as inefficiency due to lack of automated data capture and transfer for such mixed pallets.

The amount of work depends on the quantity of received mixed pallets, process used to handle them and how they and their content are identified (barcodes, pallet barcode labels, paper documents).

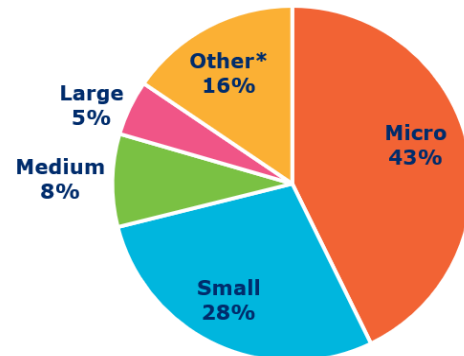
From statistical information received from SPAR Slovenia, mixed pallets use approximately 10% of warehouse storage capacity, but their SKU makes up to 50% of the total SKU count. This means that a good deal of this SKU has gone through lengthy receiving process been entered manually and this makes up a huge amount of

additional work in distribution centres (accounting for a percentage of labour several times more than the 10% of storage capacity).

Membership statistics at MOs shows that the number of members who are using EDI is around 20% of all members. This number is more or less consistent around the world with few exceptions. Importantly, only circa 5% of them (**only 1 out of every 20**) are using a Despatch Advice message. This means that the big majority of members are doing business without EDI and of course several if not most of them are also the senders or receivers of mixed pallets.

There is a clear relationship between size of the company and usage of EDI.

In case of GS1 Slovenia, there are around 5% to 13% of members which are considered as large and around 70% of small and micro companies. This distribution is more or less the same all over the world.



References to other sectors

We are witnessing demands and creation of many new AIs, because of businesses demands in various sectors such as last mile delivery (Scan4Transport) and health sector (Electronic health record patient demographic in GS1 barcodes). In both those cases limited connectivity between different systems demand that the GS1 2D barcodes contain not only the GS1 keys (SSCC, GSRN) but additional attributes as well (e.g.: patient demographic data like name, surname, last mail delivery data like delivery address, ...), when lookup into external systems is not possible. And same is also with logistics, where standards GS1 can make an even bigger impact as of until now.

4. What is the proposed action or change?

Adding GS1 2D barcodes containing pallet content to existing paper documents

Document such as the packing list contains multiple item lines, where each line specifies a GTIN (or ID) of a contained product (02), a count (37) and may also include other information such as a batch number (10) and/or expiration date (17) or production date (11) etc. There could even be situations where individual SGTINs or serial numbers (21) are specified.

GS1 practice for marking/identifying mixed pallets is that a logistic label contains only SSCC and nothing else because neither element strings nor GS1 Digital Link URIs support any repetition of GS1 Application Identifiers. So they do **not** support lists/arrays of data, which are a basic data structure of a packing list.

The idea is to find a solution using a high-capacity data carrier which would encode an array of repeated data **that is compatible with current GS1 standards for barcodes**. This would enable recipients of mixed pallets to read data about pallet contents with scanning such barcode(s).

- A definition of syntax that enables encoding of the mixed pallet data into new AI.
- A new application identifier (AI) to identify this structure and with a maximum available length.
- Contents – the data string of this new AI could be encoded in same way as is with AI 8030 for GS1 Digital Signature using base64 file-safe URI-safe characters to encode a binary string using 6 bits per character. In turn, the binary string could efficiently encode a data structure that corresponds to an array or list of data objects, where each 'row' or line item of a packing list is such a data object, with data fields to express the count, contained GTIN and other essential details such as identification of best before date, batch/lot ID and potentially serial numbers. In this way, the **'packed' contents of a new AI would be hidden from normal parsing/processing the 2D data elements but could still be read and unpacked/decoded into a list of data objects that corresponds to a packing list, while accepting that element strings and GS1 Digital Link URIs will continue to be unable to support such lists natively.**

- Full alignment between the new binary data structure and equivalent existing data elements in EDI Despatch Advice messages
- Potentially, a new AI to define a serial counter of data carrier if contents is too large and should span across two or more data carriers There is also the possibility to use a series of AIs (AI XX1, AI XX2...) to expand the data capacity.

The technical solution for the packing list in a data carrier must be capable of transforming the encoded packing list data into an equivalent data format that is compatible with either a valid EDI despatch advice or one or more valid EPCIS events with business steps of 'packing' or 'shipping'. This is important because we must maintain interoperability across these standardised formats.

Memory capacity within a single high-capacity data carrier is limited, despite huge theoretically possible data size, so it is worth thinking about using a series of carriers to encode a larger pack list.

A newly defined data structure should be size optimized to conserve space on labels, so using existing data elements such as in EDI messages as well in EPCIS data packages may be too long. This means that some kind of mapping between a new structure and existing data elements should be defined also, to optimise the efficiency of encoding/decoding.

5. Is this aligned with an Industry or GS1 Member Organisation (MO) Strategy?

If yes, provide a short description.

Strategy of supporting all members, big and small, is a general GS1 strategy, so this request is aligned with both, industry and GS1 strategy.

6. Affected Parties

- Distribution centres accepting or delivering mixed pallets.
- All supply chain entities handling mixed pallets and not fully embracing DESADV EDI message.
- Printing solution providers.
- WMS solution providers processing scanned data as part of Goods Receipts processes.

7. Risk Assessment

Describe the risks of implementing the proposed action or change

There are no known risks. The proposed solution is completely compatible with existing standard practices and implementations. Users currently relying on GS1 standards for barcodes can continue to do so, without any impact from the new AI (and the contents of that AI) since the new AI itself is not intended for use on logistic label or any other existing GS1 standard. Users that want to support the new AI may process the contents according to the methods associated with the new AI and gain the business benefits of doing so, including improved efficiency and reduced risk of data re-entry errors. EDI users with DESADV can also continue to do so without any impact.

Implementation of the new AI is in the hands of users. They can keep on using all today's existing solutions and implement a new solution when they are ready.

Describe the risks of not implementing the proposed action or change.

Not enabling the solution for quickly and accurately transferring data from a pack list would mean a continuation of manual data entry at distribution centres and other recipients of mixed pallets, resulting in significant inefficiency, manual effort and risk of data entry errors and not giving the logistic processes around the world the opportunity to become more resilient.

If the solution for fast and accurate data transfer from a pack list is not enabled, it would lead to the persistence of manual data entry at distribution centres and other places that receive mixed pallets. This would cause a lot of inefficiency, extra work and potential data entry mistakes. It would also prevent the logistic processes around the world from becoming more resilient. Potential for SMEs to adopt other proprietary solutions as already in use in numerous countries (India, Slovenia)

Are there any critical dates or deadlines to be considered?

No.

Please identify which regions are affected?

Global.

8. Industry Commitment

Are all participants willing to sign the GS1 Intellectual Property (IP) Policy?

Yes. (SPAR Slovenia)

Support from MO's:

- MO Slovenija
- MO Netherlands
- MO Sweden
- MO India
- MO Russia
- MO Hungary
- MO Bosna and Hercegovina
- MO Serbia
- MO Croatia
- MO Czech Republic