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**GS1 Germany**

# Description of the functionality of Data Quality Excellence (GS1 DQX)

## Data quality service for product master data

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## Document summary

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## Change history

**Note:** The [Change history](#) has been moved to the end of the document due to space limitations.

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# 1 Description of the GS1 DQX Data Quality Service

This document describes the requirements for participation in the GS1 DQX Data Quality Service and explains how it works. This includes the description of the transmission logic and the description of the mechanism how a GS1 DQX Certificate is awarded. The GS1 Data Quality Service differentiates between the GS1 DQX ComfortCheck and the GS1 DQX SelfCheck. In this context it is made clear when a visual validation takes place while using the GS1 DQX ComfortCheck.

## GS1 DQX ComfortCheck

With the GS1 DQX ComfortCheck, GS1 Germany checks your product master data based on the GS1 DQX validation specifications. The data goes through a two-step validation process: first the automatic validation and in the second step the manual visual validation. In this process, the data sets in the GDSN are compared to the information on the product. Once the validation has been completed, your data is certified and forwarded to the trading partners.

## GS1 DQX SelfCheck

With the GS1 DQX SelfCheck, you as a company can independently perform the validation based on the GS1 DQX validation specifications. The prerequisite for this is the previous, passed certification. Once the check has been completed, your data is certified and forwarded to the trading partners.

### 1.1 Scope of the GS1 DQX Data Quality Service

The GS1 DQX Data Quality Service is currently offered exclusively to data providers who provide products from the food and near-food sector. The verification of product master data within the scope of GS1 DQX basically consists of an automatic validation and a visual validation with the visual validation<sup>1</sup> referring exclusively to consumer units. Prerequisite for the use of the service by the data provider is the agreement to the "General Terms of Use"<sup>2</sup> of GS1 DQX.

Scope of the automatic validation

- GDSN, FMCG and DQG validation rules

Scope of the visual validation

- Consumer unit
- Food/near-food items (according to the GS1 DQX Prüfmatrix)
- Discontinuation date empty or > 7 days in future
- Base item
- No private label
- Non-variable measure
- Prepackaged

<sup>1</sup> In the case of language-dependent attributes, the visual validation is limited to the German-language specification.

<sup>2</sup> "General Terms of Use Data Quality Excellence (GS1 DQX)," available at: <https://www.gs1-germany.de/qs1-solutions/stammdaten/produktmanagement/download-center/>

## 1.2 Basic functioning of the transmission of data within the framework of GS1 DQX

The data quality service GS1 DQX aims to ensure the data quality of the product master data transmitted via the GDSN. The verification of the data refers not only to the consumer units relevant for visual validation, but also to the further levels of the packaging hierarchies, which are automatically validated without a visual validation being required.

Packaging hierarchies refer to the different levels of packaging that a product has, such as outer packaging. The packaging hierarchy includes all item levels, the base item and all packaging units (base assortments, outer and transport packaging up to pallets).

After the data set has been automatically validated, a manual visual validation is performed. This compares the data set with the product image to ensure that all details are correct and can be found in the image. At the same time, it is also ensured that all standardization specifications are met. In addition, the completeness of certain information relevant to the visual validation is checked. If an information is already present, further information must be present in the data set. At the end, the data sets that have been validated both automatically and manually are marked with the GS1 DQX Certificate.

The following list<sup>3</sup> shows the certificate information that can be transmitted to the trading partner if it is available.

Certificate information at GS1 DQX	
1)	Automatic validation <ol style="list-style-type: none"> <li>a. Result from automatic validation</li> <li>b. Related date</li> </ol>
2)	Visual validation - GS1 DQX ComfortCheck (if relevant) <ol style="list-style-type: none"> <li>a. Result from visual validation</li> <li>b. Related date</li> </ol>
3)	Visual validation - GS1 DQX SelfCheck (if relevant) <ol style="list-style-type: none"> <li>a. Result from visual validation</li> <li>b. Related date</li> </ol>
4)	GS1 DQX Certificate based on validation results 1) and 2) <ol style="list-style-type: none"> <li>a. Calculated GS1 DQX Certificate</li> <li>b. Related date</li> </ol>
5)	Error messages from the visual validation at attribute level (if relevant)

Figure 1: Certificate information at GS1 DQX

### GS1 DQX SelfCheck AVP

The attribute value pair "DQX Self Check [M578]" is used to indicate that a validation according to the GS1 DQX SelfCheck has taken place and to transmit the result of this validation.

Possible manifestations:

- passed (data set checked independently by the data provider with result passed)
- failed (data set checked independently by the data provider with result failed)

<sup>3</sup> Cf. GS1 Germany: Attributes M495 to M506 - "DQG- und DQX-Attributspezifikationen im FMCG Profil des deutschen Zielmarkts" (DQG and DQX attribute specifications in the FMCG profile of the German target market), available at <https://www.gs1-germany.de/gs1-solutions/stammdaten/produktmanagement/download-center/>

The GS1 DQX service is mapped via data exchange in the GDSN. Data providers make their data available via the GDSN, and the results of the automatic validation and visual validation are made available to retailers (data recipients) via GDSN messages. The detailed data flow within GS1 DQX via the GDSN is illustrated by the following diagram:

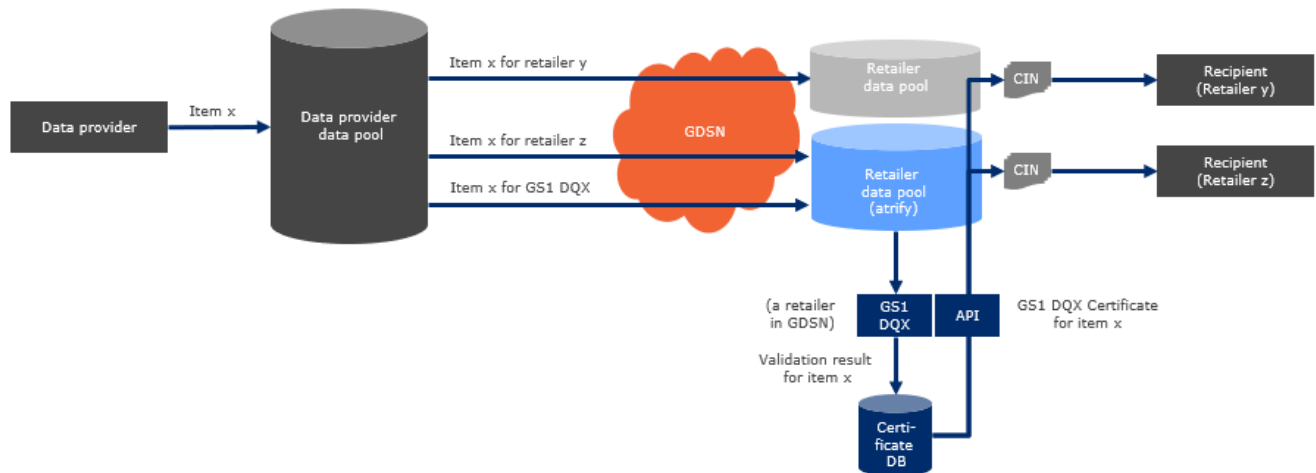


Figure 2: Data flow within the framework of GS1 DQX

- The data provider enters product master data (item x) into their home data pool and publishes it to their designated GDSN recipients ("retailer y", "retailer z" and "GS1 DQX").
- The data provider's home data pool then sends three messages to the GDSN, possibly already with a slight time offset.
- The GDSN orchestrates these messages and ensures that the message for "retailer y" is sent to the home data pool of "retailer y". Furthermore, the messages for "retailer z" and the recipient "GS1 DQX" are forwarded to their home data pool. In this case, that is atrify. The orchestration, combined with the current load in the GDSN, can result in the three messages reaching their recipients, i.e. "retailer y", "retailer z" and "GS1 DQX", with a time delay of up to one hour.
- The retailer data pools check whether the supplier participates in the GS1 DQX service before the message is transmitted to the retailer. If the data provider participates, determined validation results are recorded in the certificate database (certificate DB). Before the data is transmitted, it is subsequently checked whether results<sup>4</sup> are available for certification for GTIN x (item x) in the certificate DB. With these results, as far as available, the respective CINs are enhanced. In order to be able to distinguish at this point whether the supplier has published their item to the GS1 DQX service at all (this is not always ensured, even if the supplier generally participates in the GS1 DQX service), the sending of the message to the recipient is carried out after a maximum of one hour of waiting time.
- Three situations must now be distinguished:
  - a. The GTIN x is still not available at the GS1 DQX Service after one hour of waiting time. The message is transmitted without any certificate information.
  - b. The GTIN x is available, but a necessary visual validation has not yet taken place. The message is transmitted with the result of the automatic validation, but the overall status is still PENDING.
  - c. The GTIN x is present, the certification has been completed. The message is enhanced with the complete certification result. This will especially be the case if only an automatic validation is required. In this case, the GTIN is transmitted immediately.
- As soon as the certification status changes in cases a) and b), e.g. after the visual validation has been performed or after the GTIN x has arrived at the GS1 DQX Service, the GTIN x with the now changed

<sup>4</sup> Cf. GS1 Germany: Attributes M495 to M506 - "DQG and DQX Attribute Specifications in the FMCG Profile of the German Target Market," available at <https://www.gs1-germany.de/gs1-solutions/stammdaten/produktmanagement/download-center/>

certification results is transmitted again to "retailer y" and "retailer z". A possible status PENDING (case b)) then gives way to the final certification status.

- In exceptional cases another transmission can also occur in case c), if the certification result is subsequently changed, for example due to a complaint.

The following figure shows the basic functionality of the data transmission of the data quality service GS1 DQX. The results from the data quality validation are irrelevant for the illustration.

The starting point in the illustration corresponds to the receipt of a message from the supplier in the data pool of a retailer to which the supplier has published their item.

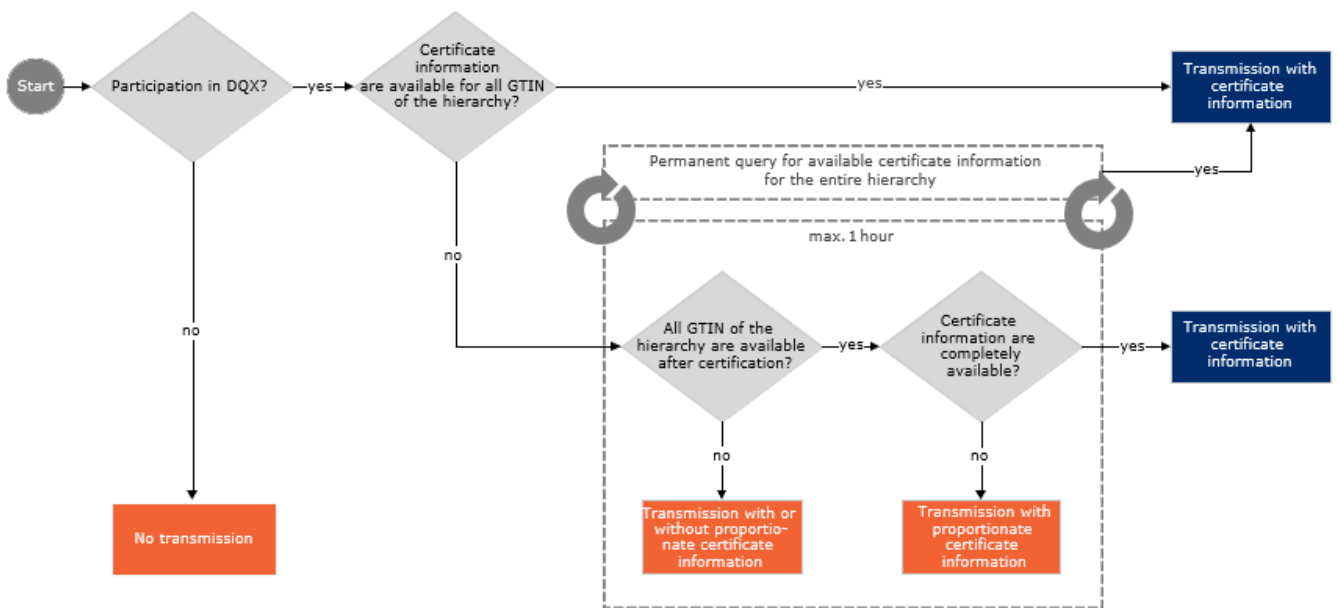


Figure 3: Basic functioning of the transmission (transmission logic)

GTINs of a packaging hierarchy are only submitted for certification if no ERROR was determined during the validation of all GTINs of this hierarchy. Thus, either the validation result PASSED or WARNING must have been determined during the automatic validation (cf. [Figure 9](#)).

The basis for the calculation of the GS1 DQX Certificate per GTIN are the validation results from the automatic validation and the visual validation. The firmly defined and uniform transmission logic is implemented by the data pool of the data recipient.



**The steps of the transmission logic (highlighted in color in fig. 4 to fig. 8 respectively) of packaging hierarchies within the framework of GS1 DQX are:**

1. Step: If the packaging hierarchy is to be transmitted to retailers, the **first step** is to check the participation of the data provider in GS1 DQX.

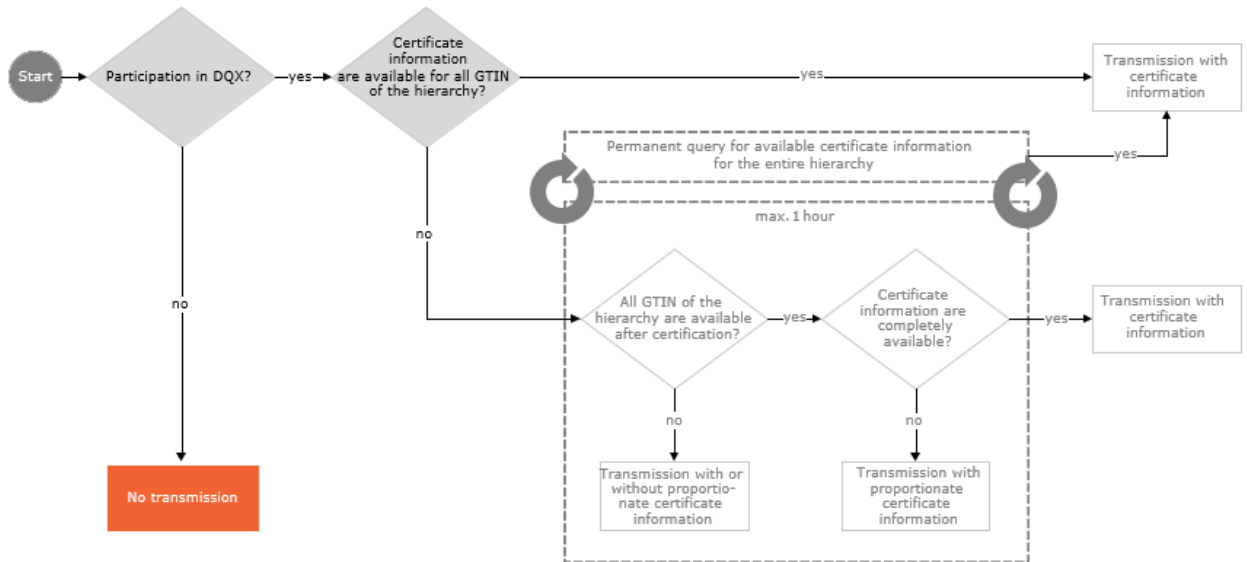


Figure 4: Detail 1 Basic functionality of the transmission (transmission logic)

Yes	No
If the data provider participates in GS1 DQX, <b>step 2</b> follows.	If the data provider does not participate in GS1 DQX, there is no transmission of the data.

2. Step: If participation in GS1 DQX is proven, the **second step** is to check whether complete certificate information is available for all GTINs of the packaging hierarchy concerned, i.e. whether certification has been completed.

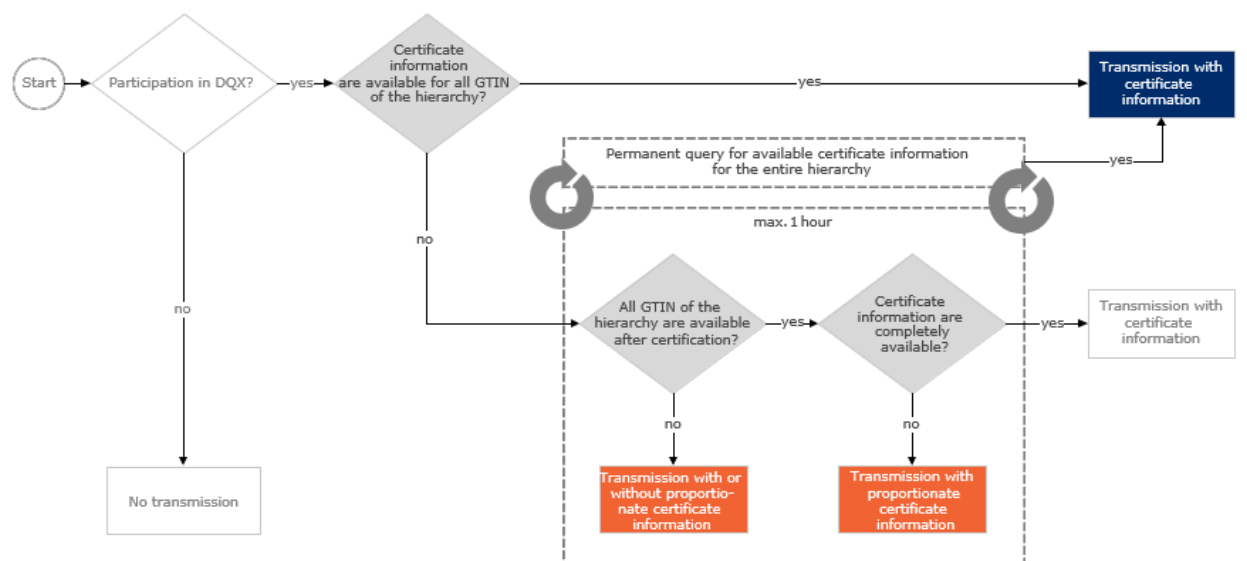


Figure 5: Detail 2 Basic functionality of the transmission (transmission logic)

Yes	No
If all certificate information is available for all GTINs of the packaging hierarchy, the complete transmission of the product master data takes place.	If not all certificate information of all GTINs of the packaging hierarchy is available, a waiting time of max. one hour starts.

**As soon as all certificate information is available at GTIN level within the defined waiting time of maximum one hour<sup>5</sup>, the packaging hierarchy is transmitted immediately.**

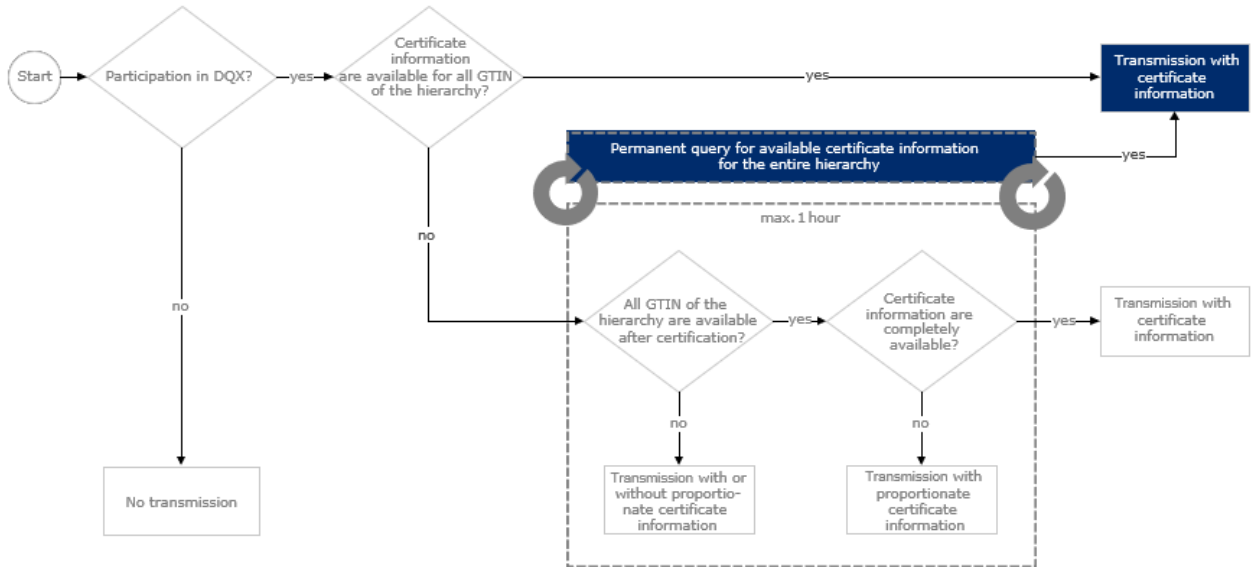


Figure 6: Detail 3 Basic functionality of the transmission (transmission logic)

- Step: If after one hour not all GTINs of the packaging hierarchy are available for certification, it is assumed that this packaging hierarchy has not been published to GS1 DQX. This one hour waiting time is due to the asynchronous architecture of the GDSN. In this case, after one hour in **step 3**, the data is transmitted to the data recipient without certification information.

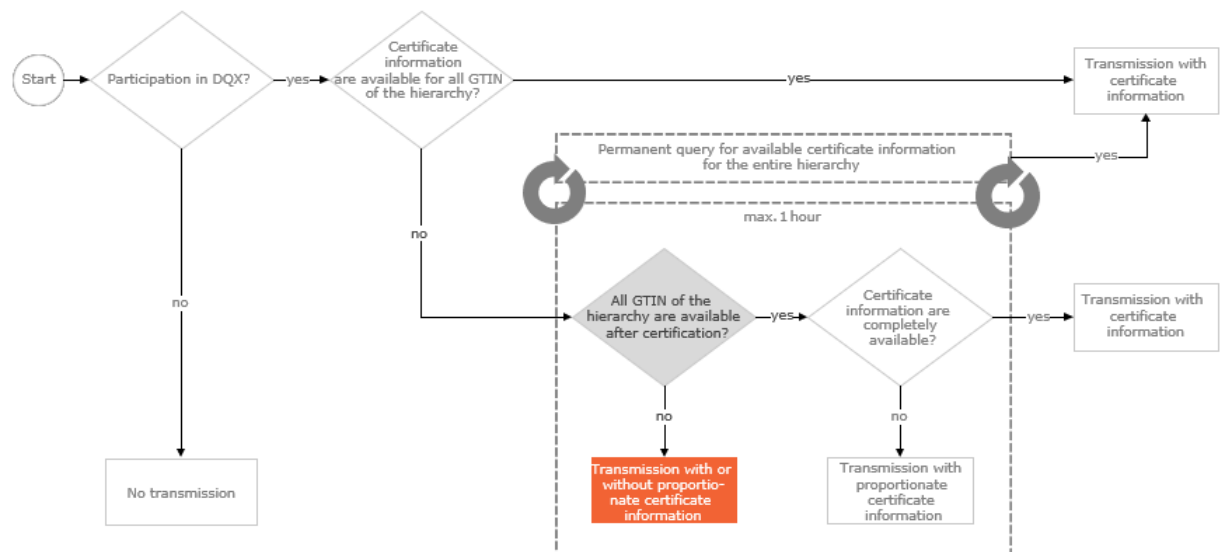


Figure 7: Detail 4 Basic functionality of the transmission (transmission logic)

<sup>5</sup> Value inherent in the system, which results from the system delay in the GDSN and the execution of the automatic validation and can thus occur as a transmission delay.

Yes	No
If all GTINs are pending for certification, the visual validation is then carried out and certification information is transmitted as soon as this is complete for all GTINs in the hierarchy or the maximum waiting time of one hour has been reached.	If not all GTINs are pending for certification, the packaging hierarchy is transmitted without complete certification information. For individual GTINs of this packaging hierarchy for which certification information is already available, this information is transmitted. This may be the case if GTINs have already been sent to GS1 DQX and certified as part of other packaging hierarchies.

4. Step: GS1 DQX pursues the goal of performing complete certification incl. the visual validation within a maximum period of 72 hours<sup>6</sup>. Despite the service level agreement of this execution time, in **step 4** the data without complete certificate information is already transmitted to the data recipient after one hour.

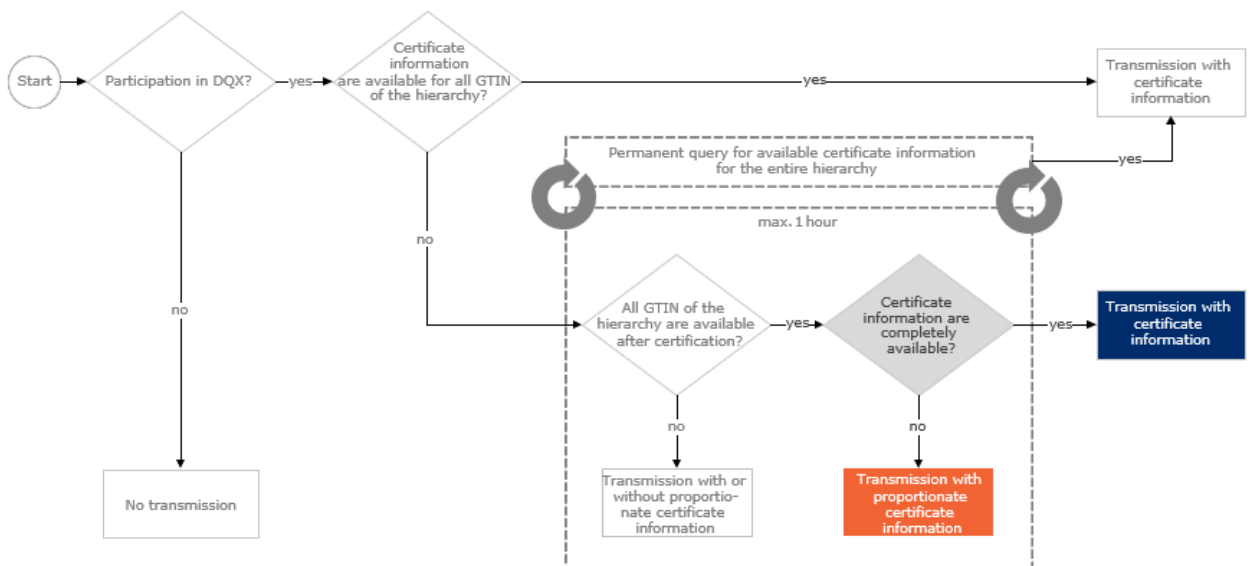


Figure 8: Detail 5 Basic functionality of the transmission (transmission logic)

Yes	No
If all certificate information (incl. result from the visual validation) is completely available within the first hour, it will be immediately transmitted.	If the certificate information for all GTINs of the packaging hierarchy is not completely available after one hour, the packaging hierarchy is transmitted. The transmitted data contains all certificate information that has been determined up to this point. In this case, the transmitted data set contains at least one GTIN that is pending for visual validation (certificate information: PENDING).

If data with incomplete certificate information has been transmitted (**step 3 or step 4**), certificate information is transmitted again as soon as validation has taken place for a GTIN within the packaging hierarchy and the GS1 DQX Certificate has been recalculated for this GTIN.

<sup>6</sup> SLA of GS1 DQX for the performance of the visual validation; as of July 2021.

### 1.3 Rules for the assignment of certificate information (GS1 DQX Certificate)

The assignment of certificate information including the GS1 DQX Certificate is done on a GTIN basis. All data sets provided are automatically validated, regardless of whether they are a consumer unit or an item within the GS1 DQX Scope. Only GTINs that are in the GS1 DQX Scope according to chapter 1.1 are subjected to the visual validation.

The GS1 DQX Certificate is calculated based on the results of the automatic validation and the visual validation. The rules of the certificate assignment follow a general process, which can be simplified as follows:

1. In the first step, it is checked whether an item (a GTIN) is in principle relevant for visual validation. If this item is not relevant for visual validation, the item is not subjected to visual validation and receives the certificate status NOT\_RELEVANT.
2. Subsequently, it is checked whether the item (the GTIN) would be relevant for the visual validation in principle, but is temporarily excluded for visual validations by setting the attribute "DQX Non Visual Validation" = "true". If this is the case, the item is not subjected to a visual validation and receives the certificate status SKIPPED.
3. a) GS1 DQX ComfortCheck  
If the item (the GTIN) is relevant for visual validation and 1. and 2. do not apply, the standard process of visual validation starts. Any further validation results can be found in the following matrix. The matrix shows how validation results in combination result in the GS1 DQX Certificate.
- b) GS1 DQX SelfCheck  
If the item (the GTIN) is relevant for visual validation and 1. and 2. do not apply, the result of the self check is taken from the AVP "DQX Self Check [M578]". Any other validation results are to be taken from the following matrix. The matrix shows how validation results in combination result in the GS1 DQX Certificate.

- Cases where the item is not relevant for visual validation are not further displayed in the matrix and are assigned the certificate status NOT\_RELEVANT.
- Data sets sent with an error message (ERROR) in the automatic validation do not participate in the visual validation. Users of the atrify WebUI receive a corresponding message directly when trying to publish the data, M2M and WebUI customers of other data pools receive this error message via a CIN message.

The calculation of the GS1 DQX Certificate is based on the following certificate logic, where a distinction is made between GS1 DQX ComfortCheck and GS1 DQX SelfCheck:

## GS1 DQX ComfortCheck

	Automatic validation	Visual validation	GS1 DQX Certificate	Explanation
1.	PASSED	PASSED	PASSED	Automatic validation & visual validation passed.
2.	PASSED	FAILED	FAILED	Automatic validation passed & visual validation failed.
3.	PASSED	PENDING	PENDING	Automatic validation passed & visual validation pending.
4.	WARNING	PASSED	FAILED	Automatic validation failed & visual validation passed.
5.	WARNING	FAILED	FAILED	Automatic validation & visual validation failed.
6.	WARNING	PENDING	PENDING	Automatic validation failed & visual validation pending.
7.	PASSED	SKIPPED	SKIPPED	Automatic validation passed & visual validation skipped. Reason: DQX Non Visual Validation = true
8.	WARNING	SKIPPED	SKIPPED	Automatic validation failed & visual validation skipped. Reason: DQX Non Visual Validation = true
9.	PASSED	NOT RELEVANT	NOT RELEVANT	Automatic validation passed & item not relevant to visual validation.
10.	WARNING	NOT RELEVANT	NOT RELEVANT	Automatic validation failed & item not relevant to visual validation.

Figure 9: Validation results of the automatic and visual validation (GS1 DQX ComfortCheck) and resulting certificate information (certificate logic) version 1.21, dated February 13, 2023. (Adjustments for cases 7 and 8 valid from May 20, 2023)

- **WARNING** (exists only for the automatic validation):  
Product master data is incorrect (errors were identified during the automatic validation).
- **PASSED**:  
Product master data are error-free in the sense of the GS1 DQX validation specifications (no validation rule applied in the automatic validation or visual validation was violated).
- **FAILED**:  
Product master data is incorrect in the sense of the GS1 DQX validation specifications.  
If product master data have been corrected after GS1 DQX Certificate assignment with the certificate information FAILED and are subsequently error-free, the GTIN receives a GS1 DQX Certificate with the certificate information PASSED after renewed validation.
- **PENDING**:  
Visual validation still pending
- **SKIPPED**:  
Visual validation is suspended because the AVP attribute "DQX Non Visual Validation" = "true" is set.

## GS1 DQX SelfCheck

	Automatic validation	Visual validation	GS1 DQX Certificate	Explanation
1.	PASSED	SC_PASSED	SC_PASSED	Automatic validation & self check passed.
2.	PASSED	SC_FAILED	SC_FAILED	Automatic validation passed & self check failed.
3.	PASSED	SC_PENDING	SC_PENDING	Automatic validation passed & self check pending.
4.	PASSED	SC_Clarification	SC_Clarification	Automatic validation passed & certification process in progress.
5.	WARNING	SC_PASSED	SC_FAILED	Automatic validation failed & self check passed.
6.	WARNING	SC_FAILED	SC_FAILED	Automatic validation & self check failed.
7.	WARNING	SC_PENDING	SC_PENDING	Automatic validation failed & self check pending.
8.	WARNING	SC_Clarification	SC_Clarification	Automatic validation failed & certification process in progress.
9.	PASSED	SKIPPED	SKIPPED	Automatic validation passed & visual validation skipped. Reason: DQX Non Visual Validation = true
10.	WARNING	SKIPPED	SKIPPED	Automatic validation failed & visual validation skipped. Reason: DQX Non Visual Validation = true
11.	PASSED	NOT RELEVANT	NOT RELEVANT	Automatic validation passed & item not relevant to visual validation.
12.	WARNING	NOT RELEVANT	NOT RELEVANT	Automatic validation failed & item not relevant to visual validation.

Figure 10: Validation results of the automatic and visual validation (GS1 DQX SelfCheck) and resulting certificate information (certificate logic) version 1.21, dated February 13, 2023. (Valid from May 20, 2023)

- **WARNING** (exists only for the automatic validation):  
Product master data is incorrect (errors were identified during the automatic validation).
- **SC\_PASSED**:  
Product master data are free of errors in terms of GS1 DQX validation specifications (no validation rule applied in the automatic validation or visual validation - GS1 DQX SelfCheck was violated).
- **SC\_FAILED**:  
Product master data is incorrect in the sense of the GS1 DQX validation specifications.  
If product master data have been corrected after GS1 DQX Certificate assignment with the certificate information FAILED and are subsequently error-free, the GTIN receives a GS1 DQX Certificate with the certificate information PASSED after renewed validation.
- **SC\_PENDING**:  
Visual validation - GS1 DQX SelfCheck still pending
- **SC\_Clarification**:  
Certification process for GS1 DQX SelfCheck underway
- **SKIPPED**:  
Visual validation is suspended because the AVP attribute "DQX Non Visual Validation" = "true" is set.

### 1.3.1 Initial load

The initial load serves the initial provision of existing data of a new participant (data provider) in the GS1 DQX Data Quality Service and is carried out within a period of fourteen calendar days.

During the initial load, GTINs are only subjected to the automatic validation. A visual validation does not take place at this point. The GS1 DQX Certificate is therefore only formed on the basis of the result of the automatic validation and the visual validation that did not take place (validation result: NOT\_RELEVANT). This means that all GTINs receive the GS1 DQX Certificate with the certificate information: NOT RELEVANT after completion of the initial load.

The GS1 DQX Certificate cannot be determined for items that have a synchronization-preventing error in the automatic validation (validation result: ERROR). In order for these items to be stored as existing data in the GS1 DQX Data Quality Service, the items must therefore not have any synchronization-preventing errors during the initial load or such errors must be corrected before the initial load expires.

### 1.3.2 Regular operation GS1 DQX ComfortCheck

After completion of the initial load, the data provider is transferred to the regular operation of GS1 DQX.

During regular operation, the visual validation is performed after completion of the automatic validation, provided that the relevant requirements are met (cf. [1.3.2.1](#) and [1.3.2.2](#)). If the GTIN is relevant for the visual validation, the status PENDING is immediately assigned as the result of the visual validation. This status is simultaneously valid as a (temporary) GS1 DQX Certificate.

Within a maximum of 72 hours, GS1 DQX ComfortCheck performs the visual validation and updates the GS1 DQX Certificate based on the visual validation result. The prerequisite for the visual validation is the provision of suitable product images/artwork by the data provider. The suitability is determined during the visual validation. Thus, at least one readable image showing the product information to be verified must be provided in order to pass the visual validation.

In the context of regular operation, a distinction is made between new items and modifications.

#### 1.3.2.1 Image provision

Product images can basically be provided in two ways:

1. GS1 DQX Upload Tool
2. GDSN

##### 1. GS1 DQX Upload Tool

If this provision path is used by a data provider, i.e. an account has been set up for the data provider, then GS1 DQX always assumes in the first step that the product images/artwork intended for visual validation are provided via the GS1 DQX Upload Tool.

If an item is received by GS1 DQX for visual validation and no relevant product images/artwork are available via GS1 DQX Upload at the end of the following business day, existing GDSN product images/artwork are used, if applicable. (cf. [1.3.2.1](#), 2. GDSN).

#### Notice:

- If the image is provided via the GS1 DQX Upload Tool, only these images are used for a visual validation. It is not possible to mix the GDSN and GS1 DQX Upload Tool provision paths for a GTIN.

#### GS1 DQX ComfortCheck

- If images are uploaded via the GS1 DQX Upload Tool, a new visual validation is always triggered.

## 2. GDSN

If the image is provided via GDSN, images for the visual validation can be labelled in the attribute "Referenced file type code" with the code *VISUAL\_VERIFICATION\_IMAGE* or the code *PRODUCT\_IMAGE*, artwork with the code *PACKAGING\_ARTWORK* or images of the product label with the code *PRODUCT\_LABEL\_IMAGE*. The latter are treated equally and used for visual validation if necessary.

- If images are available, a visual validation can be performed.

The GS1 DQX software first checks whether images with the code *VISUAL\_VERIFICATION\_IMAGE* are present.

- If this is the case, only these images are used for the visual validation.
- If there are no images with the code *VISUAL\_VERIFICATION\_IMAGE*, images with the code *PRODUCT\_IMAGE* and/or artwork with the code *PACKAGING\_ARTWORK* and/or product labels with the code *PRODUCT\_LABEL\_IMAGE* are used as a basis for the visual validation, if they are available.

### Notice:

Regardless of the provision method, the following generally applies: if product images/artwork/labels are not sufficient for a visual validation, the item will receive the result: FAILED<sup>7</sup> as GS1 DQX Certificate.

### 1.3.2.2 New items GS1 DQX ComfortCheck

GTINs that are published to GS1 DQX after completion of the initial load and are subject to certification for the first time are considered new items.

New items are always validated automatically.

In the case of a new item, a full visual validation is also carried out if the following conditions are met:

- a. The GTIN provided is a consumer unit.
- b. The GPC of the GTIN to be checked is within the GS1 DQX Prüfmatrix<sup>8</sup> (assortment range food or near-food).
- c. The AVP "DQX Non Visual Validation" attribute is not set to "true".
- d. The initial load (14 calendar days) is completed.
- e. The discontinuation date<sup>9</sup> is not set or is further than 7 days in the future.
- f. Basic item
- g. No private label
- h. Non-variable measure item
- i. Prepackaged

<sup>7</sup> Cf. figure 10, case 2.

<sup>8</sup> GS1 DQX Download Center: "GS1 DQX Prüfmatrix", available at: <https://www.gs1-germany.de/gs1-solutions/stammdaten/produktmanagement/download-center/>

<sup>9</sup> GDSN attribute: "discontinuedDateTime" - Discontinued date (time) [M004] - Here only "discontinuation date" is used.



The influence of the type of image provision in the validation of new items is shown in the following table.


New item	Is a visual validation carried out?	Which images are used for visual validation?	Follow-up process
No images provided or Images with other code values not relevant for visual validation	No	-	If no relevant product images/artwork are available at the end of the following working day or if the product images are not sufficient for a visual validation, the item receives the result: FAILED as GS1 DQX Certificate.
<sup>1</sup> Pictures via: GS1 DQX Upload Tool available	Yes	Images uploaded via GS1 DQX Upload Tool	Visual validation is performed
<sup>2</sup> Pictures with code: VISUAL_VERIFICATION_IMAGE present <sup>1</sup> not available	Yes	Images with code: VISUAL_VERIFICATION_IMAGE	Visual validation is performed
<sup>3</sup> Pictures with code: PRODUCT_IMAGE and/or PACKAGING_ARTWORK and/or PRODUCT_LABEL_IMAGE present <sup>1</sup> and <sup>2</sup> not available	Yes	Images with code: PRODUCT_IMAGE Artwork with the code: PACKAGING_ARTWORK Product label with the code: PRODUCT_LABEL_IMAGE	Visual validation is performed
 <b>Relevant product images/artwork/labels are:</b> Product images with the code: PRODUCT_IMAGE Artwork with the code: PACKAGING_ARTWORK Product label with code: PRODUCT_LABEL_IMAGE Product images with the code: VISUAL_VERIFICATION_IMAGE Product images uploaded via the GS1 DQX Upload Tool			

Figure 11: Image provision as a trigger for a visual validation of new items

<sup>1</sup> = Images uploaded via GS1 DQX Upload Tool

<sup>2</sup> = Images with code VISUAL\_VERIFICATION\_IMAGE

<sup>3</sup> = Images with code PRODUCT\_IMAGE, PACKAGING\_ARTWORK and PRODUCT\_LABEL\_IMAGE

### 1.3.2.3 Changes and corrections GS1 DQX ComfortCheck

In the context of GS1 DQX, no distinction is made between changes and corrections (therefore referred to as "change" in the following).

Changes to an item, within the associated hierarchy, always trigger a renewed automatic validation of all items in the associated hierarchies. Subsequently, the necessity of a visual validation is evaluated on the basis of the GS1 DQX Prüfmatrix and initiated if necessary. In this case, the GS1 DQX Certificate is recalculated based on both validation results.

If no new visual validation is required, the GS1 DQX Certificate is calculated based on the new result of the automatic validation and the result of the visual validation performed in the past.

When a change is made to attributes of a stock item that are relevant for visual validation after the initial load, a complete visual validation is performed.

In the case of changes, at least one of the following situations must exist in addition to the above requirements:

- A change is made to an attribute relevant to visual validation.
- Product images/artwork of a data set with the visual validation result FAILED are added, deleted or exchanged via GDSN (please note the following [Figure 12](#): Trigger of a visual validation when a change is made (images via GDSN)).
- Product images/artwork of a data set are added or exchanged via the GS1 DQX Upload Tool (please note [Figure 13](#): Trigger of a visual validation when a change is made (images via GS1 DQX Upload Tool)).
- The GPC brick of the affected data set is changed and the new GPC Brick of the data set is relevant for visual validation.

No visual validation is triggered:

- a. If only product images/artwork are added, deleted or replaced on a data set with a visual validation result of PASSED or NOT RELEVANT via GDSN<sup>10</sup>.
- b. If only changes to attributes are made that are not relevant to visual validation.
- c. If changes have been made to attributes relevant to visual validation, but the AVP attribute "DQX Non Visual Validation = true" is set.

### The triggers of a visual validation for changes, differentiated by type of image provision and existing GS1 DQX Certificate

GDSN	Status before change	
	Visual validation: PASSED	Visual validation: FAILED
Change		
Change to the data set not relevant for VV	No new visual validation	No new visual validation
VV relevant change to the data set	New visual validation	New visual validation
Product images/artwork added	No new visual validation	New visual validation
Product images/artwork deleted	No new visual validation	New visual validation
Product images/artwork exchanged	No new visual validation	New visual validation


 **Assumption:** The AVP (DQX Non Visual Validation) is = "false" or not set at all. If the AVP = "true", no visual validation task is generated.

Figure 12: Trigger of a visual validation when a change is made (images via GDSN).

GS1 DQX Upload Tool	Status before change	
	Visual validation: PASSED	Visual validation: FAILED
Change		
Change to the data set not relevant for VV	No new visual validation	No new visual validation
VV relevant change to the data set	New visual validation	New visual validation
Product images/artwork added	New visual validation	New visual validation
Product images/artwork deleted	No new visual validation	No new visual validation
Product images/artwork exchanged	New visual validation	New visual validation


 **Assumption:** The AVP (DQX Non Visual Validation) is = "false" or not set at all. If the AVP = "true", no visual validation task is generated.

Figure 13: Trigger of a visual validation when a change is made (images via GS1 DQX Upload Tool).

<sup>10</sup> Cf. figures 11 and 12.

### 1.3.2.4 Deletions

The (deletion) process stipulates that the supplier sets the "discontinuedDateTime" and sends it to the trading partners and then depublishes the item<sup>11</sup>.

- With this attribute (discontinuation date), the manufacturer or data owner **terminates** the validity of the information or data set for a GTIN.
- The date indicates that the supplier does not want to send any more updates for this item after this date.

No visual validation task is generated for items with a **discontinuation date in the past or the "near future"**<sup>12</sup>.

- GS1 DQX Certificate ⇒ "NOT RELEVANT"

A visual validation task is triggered for items with a **discontinuation date outside the defined period** ("near future").

- If the discontinuation date reaches the **defined period** ("near future") before the visual validation has been performed, the status of the item changes to "NOT RELEVANT".
- Items with a discontinuation date in the past and within the **defined time period** ("near future") will be removed from the GS1 DQX Report.

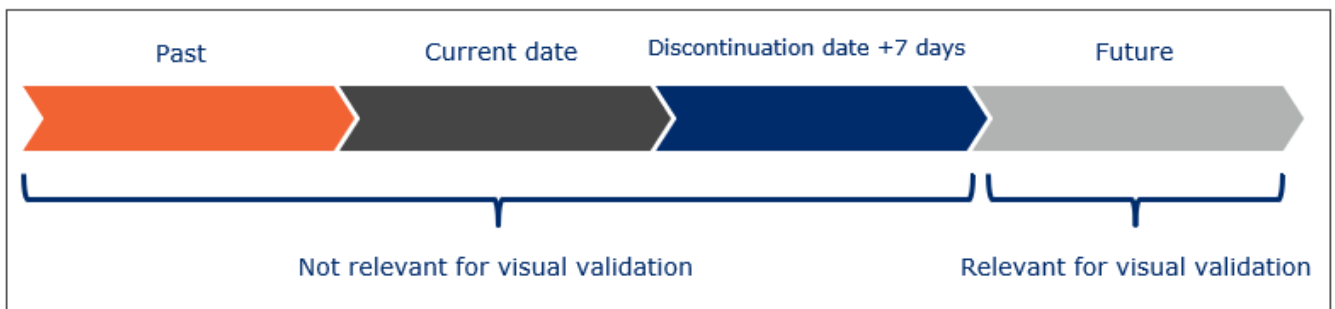


Figure 14: Period in which an item with set discontinuation date is relevant for visual validation or not relevant for visual validation

<sup>11</sup> Cf. GS1 Germany: GDSN Deletion Process for the Target Market Germany (Edition 1.0, May 2019), chapter 3.

<sup>12</sup> Near future = 7 days.

## 1.4 Special case: Suspension of the visual validation for GS1 DQX

Within the scope of the GS1 DQX Data Quality Service, the visual validation of an item can be actively suspended by setting the AVP "DQX Non Visual Validation" = "true". This is possible up to six weeks before "Start availability date (time)" by the data provider.

The AVP "DQX Non Visual Validation" attribute is considered in the certificate assignment as follows:

- a. By setting the attribute, the visual validation is suspended and the certificate information SKIPPED is assigned as the result of the visual validation. The GS1 DQX Certificate is assigned according to [Figure 9](#).

If a change is made to the product master data after the new item has been created, a check is made to ensure that the attribute AVP "DQX Non Visual Validation" is still set = "true" and that the period of six weeks until the "Start availability date (time)" is not fallen short of.

If this is the case, the visual validation continues to be suspended, even if visual validation-triggering changes have been made. The GS1 DQX Certificate continues to be formed exclusively on the basis of the automatic validation result (PASSED or FAILED).<sup>13</sup>

- b. If a change is made to the product master data after the new item has been created, a check is made to see whether the AVP "DQX Non Visual Validation" attribute is still set = "true".

If it is determined that the attribute AVP "DQX Non Visual Validation" is no longer set = "true", it is checked whether a visual validation has already taken place in the past for all provided visual validation-relevant attributes.

If all attributes of the GTIN that are relevant for visual validation have already been visually validated, the GS1 DQX Certificate is calculated based on the result of the visual validation that is already available and the result of the new automatic validation.

If not all attributes of the GTIN relevant for visual validation have been visually validated, a new visual validation takes place and the GS1 DQX Certificate is recalculated.

- c. If a change is made to the product master data after the new item has been created, a check is made to ensure that the period of six weeks until the "Start availability date (time)" is not fallen short of.

If it is determined that the time period has fallen below six weeks, this leads to an error in the automatic validation (cf. [Figure 9](#), case 2) and thus to an award of the GS1 DQX Certificate with the certificate information FAILED.<sup>15</sup>

The following figure shows exemplary use cases of the attribute AVP "DQX Non Visual Validation":

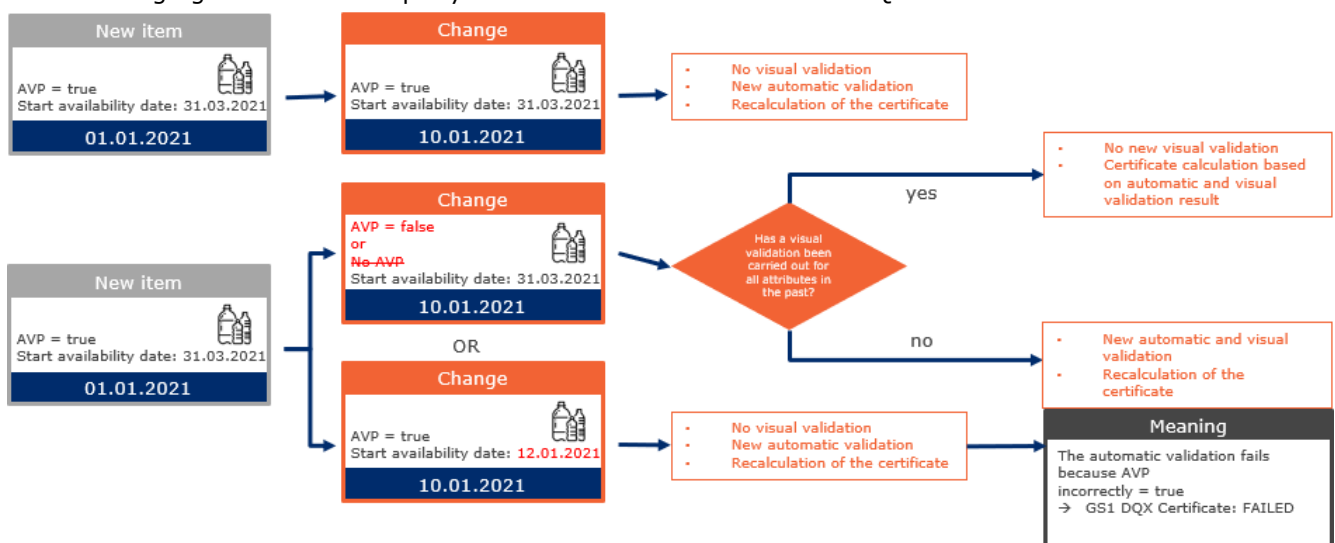


Figure 15: Special case: Suspension of visual validation for GS1 DQX

<sup>13</sup> With the May release 23.05, the adjustment of the certification logic is carried out according to figure 12.

## 1.5 Exception process: Dealing with changes in the target market GS1 DQX ComfortCheck

The exception process for handling target market changes (such as in the cases defined in 01) provides the ability to avoid visual validation due to target market related changes for data sets that are not certified.

The exception process does not apply to certified data sets<sup>14</sup>. The regular process for triggering visual validations is followed.

01. Condition - defined case:

- a. It is an attribute deletion or attribute transfer.
- b. It is a code list change.

02. Condition - application:

- a. GS1 CCDQ-DQX receives an application with all relevant information in due time<sup>15</sup>.

03. Condition - approval:

- a. The application is approved due to the present relevance.

The required application form can be downloaded here: [GS1 DQX Application Form Exception Process - Target Market Changes](#). Please send the completed application form via email to the GS1 DQX Support ([dqx-support@gs1.de](mailto:dqx-support@gs1.de)).

The following figure shows the timeline of the exception process within GS1 DQX for handling changes in the target market:

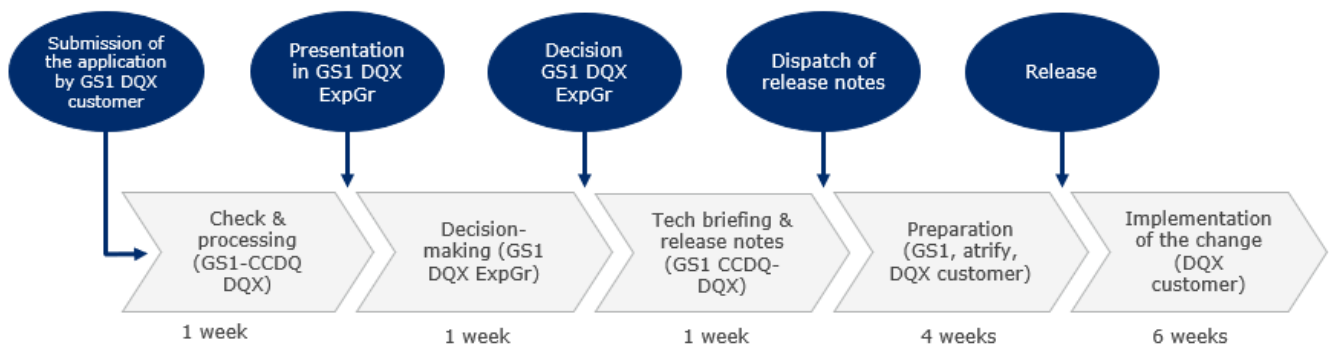


Figure 16: Exception process: Dealing with changes in the target market

<sup>14</sup> GS1 DQX Certificate with the characteristics PASSED/FAILED

<sup>15</sup> At least 7 weeks before relevant release

## Change history

Version	Modification date	Description of the change
1.0	30.01.2020	Initial preparation of the document for the AT meeting on 10.02.2020
2.0	17.03.2020	Document update (Requirements from the AT were adopted, such as suspension of the correction period and reduction of the transmission stop)
2.1	02.04.2020	First published
2.2	08.04.2020	Comment collection and updating of images for visual validation
2.3	12.04.2020	Updating of the certificate matrix and concretization of the images for visual validation
2.4	29.05.2020	Addition of a code value for image provision (for artwork)
2.4.2	05.11.2020	Minor adjustments and clarifications of formulations
2.4.3	25.11.2020	Minor additions and note on the temporary suspension of the correction deadline
2.5	13.07.2021	Inclusion of product label with code PRODUCT_LABEL_IMAGE as images relevant to visual validation Inclusion of point e. in chapter 1.4.2.2 Addition chapter 1.4.2.4 Deletions <b>Valid from release 21.08</b>
2.5.1	21.10.2021	Minor adjustments Addition in chapter 1.4.1 Initial Load
2.5.2	11.02.2022	Removal chapter "Correction period Adjustment figure 10 Update Initial load
2.5.3	29.06.2022	Addition chapter 1.5 Exception process: Dealing with changes in the target market
2.5.4	12.10.2022	Clarification of the wording regarding time guarantee for image upload in chapter 1.3.2
2.6.0	03.03.2023	Addition of differentiation between GS1 DQX ComfortCheck and GS1 DQX SelfCheck Update figures 1-8 Update figures 10/11/12 (Differentiation between GS1 DQX ComfortCheck and GS1 DQX SelfCheck) Adjustments in preparation for release 23.05
2.6.1	28.03.2023	Addition to figure 9: adjustment for cases 7 and 8 is valid from May 20, 2023 Correction figure 15
2.6.2	14.04.2023	Minor adjustments
2.6.3	11.05.2023	Correction of the description of the regular operation of the GS1 DQX ComfortCheck in chapter 1.3.2 when at least one readable product image is provided

## Glossary

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### A

Automatic validation - *Automatic data validation according to predefined validation rules*

AVP DQX Non Visual Validation - *Used to suspend a visual validation of visual validation relevant items up to six weeks prior to "Start availability date (time)"*

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### C

Certificate DB - *Database where GS1 DQX validation results are stored*

Certificate logic - *Logic on the basis of which the GS1 DQX Certificate is calculated from the validation results from the automatic validation and the visual validation*

CIN (Catalog Item Notification) - *This message contains the information about the respective master data that the data provider captures*

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### E

Existing data - *Data provided to GS1 DQX in the initial load. Are excluded from visual validation as long as no change has been made to a visual validation relevant attribute*

---

### G

GS1 DQX - *Data quality service "GS1 Data Quality Excellence" for checking product master data in the GDSN*

GS1 DQX Prüfmatrix (validation matrix) - *With the help of the GS1 DQX Prüfmatrix, GPC classes can be compared with the attributes relevant for visual validation. This enables an analysis of which items are visually validated and to what extent.*

GS1 DQX Certificate - *The GS1 DQX Certificate is at the end of the process, consists of the results of an automatic and a visual validation and provides information on the data quality of the checked GTIN in accordance with the GS1 DQX validation specifications.*

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### I

Initial load - *The time period during which a new GS1 DQX participant (data provider) makes their existing data available to the service so that it is excluded from an initial visual validation.*

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### P

Packaging hierarchy - *Includes all item levels, the base item and all packaging units (base assortments, repackaging and transport packaging up to pallets).*

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### T

Transmission logic - *Basic functioning of the data transmission of the GS1 DQX Data Quality Service*

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## V

Visual validation - *Checking/matching of visual validation-relevant attributes in the data set against provided image material*



## Imprint

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