

GS1 US National Data Quality Program

FRAMEWORK

R1.0 — FEB 12 2015



THE GLOBAL LANGUAGE
OF BUSINESS

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ABOUT GS1

GS1® is a neutral, not-for-profit, global organization that develops and maintains the most widely-used supply chain standards system in the world. GS1 Standards improve the efficiency, safety, and visibility of supply chains across multiple sectors. With local Member Organizations in over 110 countries, GS1 engages with communities of trading partners, industry organizations, governments, and technology providers to understand and respond to their business needs through the adoption and implementation of global standards. GS1 is driven by over a million user companies, which execute more than six billion transactions daily in 150 countries using GS1 Standards.

ABOUT GS1 US

GS1 US, a member of the global information standards organization GS1, brings industry communities together to reduce supply-chain problems through the adoption and implementation of GS1 Standards. Nearly 300,000 businesses in 25 industries rely on GS1 US for trading-partner collaboration and for maximizing the cost effectiveness, speed, visibility, security and sustainability of their business processes. They achieve these benefits through solutions based on GS1 global unique numbering and identification systems, barcodes, Electronic Product Code (EPC®)-enabled RFID, data synchronization, and electronic information exchange. GS1 US also manages the United Nations Standard Products and Services Code® (UNSPSC®). www.GS1US.org.

1 DOCUMENT INFORMATION

1.1 DOCUMENT SUMMARY

DOCUMENT ITEM	CURRENT VALUE
DOCUMENT TITLE	GS1 US National Data Quality Program: Framework
DATE LAST MODIFIED	Feb 05 2015
CURRENT DOCUMENT RELEASE	R 1.0
STATUS	Final
DOCUMENT DESCRIPTION	This document presents an introduction to the <i>GS1 US National Data Quality Program</i> , as well as detailed information about the certification process and criteria.

1.2 PURPOSE OF THIS DOCUMENT

This document describes the *GS1 US National Data Quality Program* framework. It provides detailed information about the certification program, including the assessment criteria and scoring for the three pillars of data quality (i.e., Data Governance Process; Education and Training Protocol; and Attribute Audit).

NOTE: As with all GS1 Standards and solutions, the GS1 US National Data Quality Program is voluntary, not mandatory. It should be noted that use of the words “must” and “require” throughout this document relate exclusively to technical recommendations for the proper application of the standards to support the integrity of your implementation.

2 INTRODUCTION

Consumers have become more demanding in their purchasing decisions. From a consumer's perspective, having access to the right product at the right time at the right price is paramount to their shopping experience – whether it is through traditional brick-and-mortar or on-line purchasing. With shrinking margins and increased competition, the ability to meet the consumer's needs in the most cost-efficient manner is critical to retailers and e-tailers alike. The ability to service the customer in the manner they are demanding is dependent upon accurate and complete data.

As the reliance on data increases, so does the need for data to be timely as well as accurate. Despite years of attempting to improve the quality of data through various programs, the pervasive sentiment is that a fresh approach must be taken on this critical matter. In response, GS1 US worked with a cross-industry discussion group to establish the *GS1 US National Data Quality Program*, a new approach to data quality and data governance. The *GS1 US National Data Quality Program* addresses the need for complete and accurate product data by providing a common approach for organizations to adopt. This common approach will promote a level of trust about product information received or retrieved by trading partners and consumers alike.

Developed with companies in the General Merchandise, Hardlines, Healthcare, Consumer Packaged Goods (CPG), Grocery, Fresh Foods, Retail, and Foodservice sectors, the *GS1 US National Data Quality Program* is universally applicable. Any company, regardless of size, product type or channel, can adopt the *GS1 US National Data Quality Program*. This program provides companies serving more than one sector with a common approach to data quality. In addition, the program enables each industry to add additional components to address their industry-specific challenges should the need arise.

The *GS1 US National Data Quality Program* provides organizations with a comprehensive approach to data quality that encompasses:

- Validating that a data governance process exists within an organization to support the creation and maintenance of product data based on GS1® Standards.
- Confirming proper education and training on GS1 Standards within an organization with regard to creating and maintaining accurate product data.
- Auditing, verifying and comparing product attributes to most recently shared data to enable trading partners to have confidence that the data shared is accurate, complete and timely.

This document describes the *GS1 US National Data Quality Program* framework. It provides detailed information about the certification program, including the assessment criteria and scoring for the three pillars of data quality (i.e., Data Governance Process; Education and Training Protocol; and Attribute Audit).

3 DATA QUALITY WITHIN AN ORGANIZATION

Trading partners **define** data quality as having consistent, complete, accurate, standards-based, time-stamped data. Trading partners **measure** product data quality as “**electronic data exchanged equals physical data.**” Data quality reaches beyond accurate data - encompassing an overall program within an organization that includes executive leadership support, commitment to standards-based data, and processes to validate that consistent, complete and accurate information is being captured and utilized for both internal processes and external sharing. This provides the foundation for an efficient supply chain and enables trading partner collaboration.

3.1 PRODUCT DATA MANAGEMENT & GOVERNANCE

Data can originate from several sources including external vendors and internal departments. Without a robust business process in place, the quality of data can deteriorate as it flows through the supply chain. Due to potential cost implications and requests from trading partners, many companies have started to scrutinize their internal processes and education practices with regard to data quality, and perform audits of the information received from and shared among their trading partners. Common areas of review include:

- Master Data Governance
- GTIN Management
- Product Measurement
- Data Synchronization

Refer to the GS1 US Data Quality Implementation Guide for detailed “how to” guidance and recommendations for implementing a data quality program within an organization.

3.2 FIVE POINT BEST PRACTICE

Companies that have strong data management programs consistently follow industry best practices for continuity and consistency. These companies have documented processes that are shared throughout the organization. Five points (referred to as the *Five Point Best Practice**) can summarize the industry best practices for data quality:

1. Adhere to GS1 Standards and rules for initial attributes in internal setup.
2. Assign data owners throughout the organization.
3. Appoint one entity/department/individual as the sole owner of product data.
4. Audit all new items produced in a sustainable production environment ready for shipment (i.e., finished goods).
5. Execute communication of initial attributes and package measurements, both internally and externally.

* The “Five Point Best Practices” are provided courtesy of and with the permission of 1WorldSync Inc.

See the GS1 US Data Quality Implementation Guide for detailed “how to” guidance and recommendations for implementing the Five Point Best Practice.

4 THE GS1 US NATIONAL DATA QUALITY PROGRAM

The *GS1 US National Data Quality Program* was developed as a voluntary, sector-neutral, standardized set of guidelines that enables trading partner collaboration to achieve the benefits of good quality data, regardless of size, sector, or supply chain role. The program was developed with input and participation from all segments of industry through a collaborative process, and is considered best practice for launching and sustaining a “best in class” data quality program.

4.1 OVERVIEW

The *GS1 US National Data Quality Program* is designed to validate that an organization’s internal data governance process is documented and adhered to, and to demonstrate institutional knowledge of GS1 Standards, such as the *GS1 Global Trade Item Number® (GTIN®) Allocation Rules* and the *GS1 Global Data Synchronization Network™ (GDSN®) Package Measurement Rules*, by those individuals responsible for quality data.

The program provides an assessment process that focuses on three pillars of data quality:

- **Data Governance Process**
- **Education and Training Protocol**
- **Attribute Audit**

The program offers suppliers the opportunity to become certified for satisfying the assessment criteria for all three pillars of data quality.

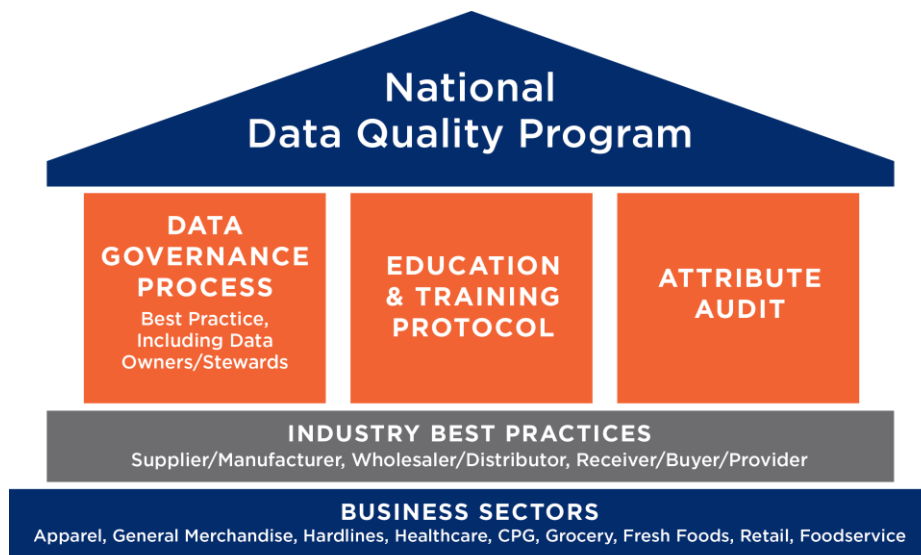


Figure 1. GS1 US National Data Quality Program

4.2 SCOPE

- The *GS1 US National Data Quality Program* supports businesses from all industry sectors and supply chain roles.
- The program applies to both existing products as well as new item introduction starting with the innovation phase.

- The program assessment process focuses on product attributes that are considered critical across all sectors. Future phases may include additional attributes if the community deems they are critical to meeting trading partner needs.

Note: *The initial focus of the program is supply chain attributes which have been considered “core” for many years. However, data quality applies to all data attributes that are shared between trading partners. Criteria for Certification may be revised as needed to suit the needs of the industry/consumer.*

4.3 GUIDING PRINCIPLES

The following guiding principles were adhered to throughout the development of the *GS1 US National Data Quality Program*. Pursuant to those guiding principles, the program is:

1. Based on user needs (i.e., demand-side and supply-side partners)
2. Voluntary (i.e., adherence to the program will be determined by the trading partner relationship)
3. Comprehensive in structure, yet providing for flexible implementation as required by trading partners
4. Complementary to and evolving with changes to GS1 Standards
5. Based on a data quality industry protocol formed by two components: 1) data inspection against product characteristics, and 2) a data quality management procedure to validate the existence and effectiveness of key data management business processes
6. Based on an open system whereby entities may offer services for product attribute audits and certification assessments
7. Open for use by any business entity (*however, certification cannot be provided by non-certified organizations*)
8. Based on a standardized approach for attribute audits (i.e., utilizing the *GS1 GDSN Package Measurement Rules*, *GS1 GTIN Allocation Rules*, a set of Key Performance Indicators (KPIs), and a common sample size). The program accommodates small, medium and large enterprises.

4.4 ASSESSMENT & CERTIFICATION

The *GS1 US National Data Quality Program* offers suppliers the opportunity to become certified for satisfying all three pillars of data quality. The program provides an assessment process for each pillar:

- **Pillar 1: Data Governance Process** -- an assessment designed to determine the degree to which people, processes, and procedures are in place within an organization to validate that quality data is maintained and shared across all necessary business entities.
- **Pillar 2: Education and Training Protocol** – a series of assessments designed to verify the comprehension and proper application of the GS1 System of Standards within the organization.
- **Pillar 3: Attribute Audit** -- an assessment of select key product attributes to validate that the attribute information being shared with trading partners matches the physical product (also known as a “physical audit”).

Each pillar has defined criteria and thresholds (discussed in detail in the following sections) used to measure the supplier’s performance. ***A supplier must achieve a passing score in all three pillars in order to receive certification.***

5 PILLAR 1: DATA GOVERNANCE PROCESS

Verification of the *Data Governance Process* is comprised of an assessment designed to determine the degree to which people, processes, and procedures are in place within an organization to validate that quality data is maintained and shared across all necessary business entities.

5.1 ASSESSMENT

The *Data Governance Process* assessment consists of a series of probing questions regarding:

- Data Governance
- Data Quality
- GTIN Management
- Product Management
- Attribute Accuracy
- Data Synchronization
- Training

Each section includes requirements for documentation, and/or additional questions that will be asked by the auditor. The documentation and preliminary responses may be provided to the auditor in advance of an on-site interview at the supplier's location. The *Data Governance Process* assessment can serve as a tool to help a company determine whether they are ready to begin the certification process.

5.2 SCORING

The supplier must achieve a score of **90%** to receive a “passing score” for *Pillar 1: Data Governance Process*.

6 PILLAR 2: EDUCATION & TRAINING PROTOCOL

An organization should ensure that all parties responsible for product data are part of an on-going education program. Appropriate records of education, training, skills and experience should be kept for each individual, along with an evaluation of the effectiveness of the training. This information can help identify instances where additional training may be required.

To that end, verification of the *Education and Training Protocol* is comprised of an assessment designed to verify the comprehension and proper application of the GS1 System of Standards within the organization.

6.1 ASSESSMENT

For the *Education and Training Protocol* assessment, participants need to provide evidence of whom within the organization has been trained, and the method(s) by which they are kept current. This information will be collected through an interview process as a part of the *Data Governance Process Assessment*, as well as a series of quizzes. The areas of focus are:

- GTIN Allocation
- Product Measurement
- Data Synchronization (if applicable)

6.2 SCORING

The supplier must achieve a score of **90%** on *each quiz* to receive a passing score for *Pillar 2: Education and Training Protocol*.

7 PILLAR 3: ATTRIBUTE AUDIT

The ultimate proof of an organization's capacity to produce and maintain good quality data lies within the product information itself. The quality of an organization's product information provides insight to internal challenges and/or opportunities within the organization's processes. An analysis of an organization's data output can offer clear indications of whether something is not quite right in the data governance process.

To that end, the *Attribute Audit* encompasses an assessment of select key product attributes to validate that the attribute information being shared with trading partners matches the physical product (also known as a "physical audit").

7.1 KEY CONCEPTS

7.1.1 KPI ATTRIBUTES TO BE AUDITED

To measure the degree to which product information can be considered of good quality, the *GS1 US National Data Quality Program* examines a series of attributes whose data accuracy provide good indicators of organizational data quality. These attributes can be considered data accuracy Key Performance Indicators (KPIs) (i.e., accuracy in these specific attributes can be indicative of good data quality). In general, data accuracy KPIs are measured as the degree to which the product information stored in a repository is consistent with the physically observable characteristics of the trade item. Data accuracy KPIs can be periodically monitored to verify the actual accuracy of the product information, and are considered validation of adherence to the data governance process.

In order to support businesses from all industry sectors, the data accuracy KPIs represent product attributes that are universally applicable. The initial set of KPI attributes has been separated into two categories: *Foundational Attributes* and *Fundamental Attributes*. The attributes included in each category are shown in the table below.

FOUNDATIONAL ATTRIBUTES	FUNDAMENTAL ATTRIBUTES
<ul style="list-style-type: none"> • Brand Name • Declared Net Content/Unit of Measure • Pack Quantity • GTIN 	<ul style="list-style-type: none"> • Linear Dimensions/Unit of Measure (Height, Width, Depth) • Gross Weight/Unit of Measure • TI-HI • Country of Origin

Table A. Attributes to be Audited

7.1.2 ATTRIBUTES FOR EXISTING PRODUCTS VS. ATTRIBUTES FOR NEW ITEMS IN DEVELOPMENT

The *Attribute Audit* assesses attributes for existing products as well as attributes for new items including product development. It is recognized that attributes for new items in development can be evolving, and therefore change management practices for new item attributes may vary from change management practices for existing products. Likewise, change management practices for new items can also vary for foundational attributes versus fundamental attributes.

Therefore, in order to provide clarity, the following table presents the change management criteria that will be used during *Attribute Audits* for new item attributes and existing product attributes.

	FOUNDATIONAL ATTRIBUTES	FUNDAMENTAL ATTRIBUTES
ATTRIBUTES TO BE AUDIED	<ul style="list-style-type: none"> • Brand Name • Declared Net Content/Unit of Measure • Pack Quantity • GTIN 	<ul style="list-style-type: none"> • Linear Dimensions/Unit of Measure (Height, Width, Depth) • Gross Weight/Unit of Measure • TI-HI • Country of Origin
CHANGE MANAGEMENT FOR EXISTING PRODUCTS	Any change made to foundational attributes for existing products should adhere to the <i>GS1 GTIN Allocation Rules</i> .	Any change made to fundamental attributes for existing products should adhere to the <i>GS1 GTIN Allocation Rules</i> .
CHANGE MANAGEMENT FOR NEW ITEMS IN THE INNOVATION PHASE	Any change made to foundational attributes during innovation of a new item should adhere to the <i>GS1 GTIN Allocation Rules</i> <u>once shared* with trading partners</u> . (In this context, “share” is defined as any method by which this information is communicated, such as GDSN, product catalogs, portals, sales sheets, etc.)	Any change made to fundamental attributes during innovation of a new item will <u>not</u> need to adhere to the <i>GS1 GTIN Allocation Rules</i> . (However, once in production, the <i>GS1 GTIN Allocation Rules</i> must be adhered to.)

Table B. Attribute Audit Change Management Criteria

For thoroughness, the change management criteria will be repeated in the applicable sections below.

7.2 AUDIT CRITERIA FOR FOUNDATIONAL ATTRIBUTES

There are four foundational attributes assessed during the *Attribute Audit*. The table below presents the foundational attributes with the associated change management rules:

FOUNDATIONAL ATTRIBUTES	
ATTRIBUTES	<ul style="list-style-type: none"> • Brand Name • Declared Net Content/Unit of Measure • Pack Quantity • GTIN
CHANGE MANAGEMENT FOR EXISTING PRODUCTS	Any change made to foundational attributes for existing products should adhere to the <i>GS1 GTIN Allocation Rules</i> .
CHANGE MANAGEMENT FOR NEW ITEMS IN THE INNOVATION PHASE	Any change made to foundational attributes during innovation of a new item should adhere to the <i>GS1 GTIN Allocation Rules</i> <u>once shared* with trading partners</u> . (In this context, “share” is defined as any method by which this information is communicated, such as GDSN, product catalogs, portals, sales sheets, etc.)

Table C. Foundational Attributes

During the physical audit, each foundational attribute is physically reviewed for accuracy using the criteria defined in this section. (Note: The *GS1 GTIN Allocation Rule* associated with each attribute is listed for quick reference.)

7.2.1 BRAND NAME

Definition: The recognizable name used by a brand owner to **uniquely** identify a line of trade item or service. This is recognizable by the customer.

Assessment: The audit of *Brand Name* will consist of visual inspection that assesses whether:

- The *Brand Name* that is physically on the package matches the information being shared with trading partners.
- The spelling is correct.
- The *Brand Name* is consistent by product line.

Associated GS1 GTIN Allocation Rules:

- Rule 2.1 Brand
- Rule 2.2 Brand Graphics
- Rule 2.3 Brand Addition

7.2.2 DECLARED NET CONTENT/UNIT OF MEASURE (UOM)

Definition: The amount of the trade item contained in a package as claimed on the label.

Audit Criteria: An item will be audited for this attribute if one of the following conditions exist:

- If the *Consumer Unit Flag* = Y
- If the item is identified with a barcode and has a declared net content on the package (even if the *Consumer Unit Flag* is not flagged to Y)

Assessment: The audit of *Declared Net Content* will consist of visual inspection that assesses whether the information that is physically on the package matches the information shared with trading partners.

- For example: if the package says 16 oz., 1 lb. cannot be communicated

Note: The supplier should strive to communicate all Declared Net Content. However, if only one is communicated, it should be the imperial representation (not metric). The Declared Net Content shared must be what is presented on the product.

Associated GTIN Allocation Rules:

- Rule 4.1.2 Non-Declared Change (Net Weight, Count or Volume)
- Rule 4.1.3 Net Content
- Rule 4.1.6 Additional Net Content Unit Of Measure
- Rule 4.1.9 Marketing Declarations (*new as of October, 2013*)

7.2.3 PACK QUANTITY

Definition: The number of items in the next lower level of a hierarchy (does not include the pallet).

Assessment: The audit of *Pack Quantity* will consist of a visual inspection that assesses whether information being shared with trading partners for each level of the hierarchy matches what is contained in the physical package.

- EXAMPLE 1: a case has 2 inner packs both identified with a GTIN; both inner packs contain 4 eaches.
 - The *Pack Quantity* of Case = 2
 - The *Pack Quantity* of the Inner Pack = 4
 - The *Pack Quantity* of the Each = 1
- EXAMPLE 2: a case has 8 eaches (no inner pack).
 - The *Pack Quantity* of the Case = 8
 - The *Pack Quantity* of the Each = 1

Associated GTIN Allocation Rules:

- Rule 4.1.1 Count of Items in a Pack
- Rule 4.1.4 Contents of a Dynamic Assortment (*Revised January, 2014*)
- Rule 4.4.1 Random Packs (*Revised January, 2014*)
- Rule 4.4.2 Pre-Defined Assortment (*Revised January, 2014*)
- Rule 4.5 Combination Pack (*Revised July, 2013*)

7.2.4 GLOBAL TRADE ITEM NUMBER (GTIN)

Definition: A globally-accepted 8, 12, 13, or 14-digit number that uniquely identifies products/trade items.

Assessment: The audit of the GTIN will consist of an assessment of:

- **Structure:** The GTIN that is being shared should be 14 digits, all numeric (regardless of what is on the package (U.P.C./EAN, ITF, etc.)).
- **Uniqueness:** Ensure each level of the hierarchy has been assigned a unique number.
- **Correctness:** The GTIN on the physical item matches the GTIN being shared.

Note: Virtual GTINs are subject to audit and should be published. Virtual GTINs are defined as GTINs that have been assigned to a product that are not marked on the product.

Associated GTIN Allocation Rules: none

7.3 AUDIT CRITERIA FOR FUNDAMENTAL ATTRIBUTES

There are four fundamental attributes assessed during the *Attribute Audit*. The table below presents the fundamental attributes with the associated change management rules:

FUNDAMENTAL ATTRIBUTES	
ATTRIBUTES	<ul style="list-style-type: none"> • TI-HI • Country of Origin • Linear Dimension Accuracy / Unit of Measure (Height, Width, Depth) • Gross Weight / Unit of Measure • Overall Accuracy (<i>a combination of Linear Dimension Accuracy and Gross Weight</i>)
DATA MANAGEMENT RULE FOR EXISTING PRODUCTS	Any change made to fundamental attributes for existing products should adhere to the <i>GS1 GTIN Allocation Rules</i> .
DATA MANAGEMENT RULE FOR NEW ITEMS IN THE INNOVATION PHASE	Any change made to fundamental attributes during innovation of a new item will not need to adhere to the <i>GS1 GTIN Allocation Rules</i> . (However, once in production, the <i>GS1 GTIN Allocation Rules</i> must be adhered to.)

Table D. Fundamental Attributes

During the audit, each fundamental attribute is physically reviewed for accuracy using the criteria defined in this section. (*Note: The GS1 GTIN Allocation Rule associated with each attribute is listed for quick reference.*)

7.3.1 TI-HI

Definition: TI-HI refers to the number of cartons stored on a layer or tier (i.e., the TI) and the number of layers high that these will be stacked on the pallet (i.e., the HI).

Assessment: The audit of TI-HI will include:

- Physical count of number of cases for one layer (TI) as compared to the information being shared.
(*Number of layers (HI) will not be audited as this can vary by customer and/or place of audit.*)
- Verification that the fields are populated.
- Reasonableness check (not 0, not 99 by 1, etc.).
- Process Audit verifying that there is a process in place to update the TI-HI if/when changes are made.

Associated GTIN Allocation Rules:

- Rule 3.3 New / Additional Pallet Layout

7.3.2 COUNTRY OF ORIGIN

Definition: The country code(s) in which the goods have been produced or manufactured.

Audit Criteria: An item will be audited for this attribute if the *Country of Origin* is marked on the product. If the *Country of Origin* is not marked on the product, the product is not audited for this KPI.

Assessment: The audit of *Country of Origin* will consist of a visual inspection assessing whether:

- The information on the physical product matches the attribute information shared with trading partners.
- If a product is produced in multiple countries, the human-readable component must match at least one *Country of Origin* being shared by the supplier.

Associated GTIN Allocation Rules: *none*

7.3.3 LINEAR DIMENSION ACCURACY

Definition: The physical dimensions at all levels of the hierarchy have accurate and complete values for the dimensions listed below and are based on the *GS1 GDSN Package Measurement Rules* (including tolerances). The dimensions that need to be associated with a valid Unit of Measure (UoM) are:

- Height,
- Width, and
- Depth.

Assessment: The audit of *Linear Dimension Accuracy* will consist of:

- Physical measurement of the product (with the tolerances applied) at all levels of the hierarchy.
- Comparison of the measurements taken with the information being shared with trading partners.
- Verification of adherence to *GS1 GDSN Package Measurement Rules* (including tolerances).

Note: Refer to the GS1 GDSN Package Measurement Rules for guidance on package measurement in accordance to the GS1 Standards.

Associated GTIN Allocation Rules:

- Rule 3.1 Packaging With Major Impact
- Rule 3.2.1 Packaging With Minor Impact
- Rule 3.2.2 Packaging – Standard Trade Item Grouping Level

7.3.4 GROSS WEIGHT

Definition: Identifies the gross weight of the case. The *Gross Weight* includes all packaging materials of the case and its contents. The weight has to be associated with a valid UoM.

Assessment: The audit of *Gross Weight* will consist of:

- Physical weighing of the product (with the tolerances applied) at the case.
- Comparison of the weight taken with the information being shared with trading partners.

Associated GTIN Allocation Rules:

- Rule 3.1 Packaging With Major Impact
- Rule 3.2.1 Packaging With Minor Impact
- Rule 3.2.2 Packaging – Standard Trade Item Grouping Level

7.3.5 OVERALL ACCURACY

Overall Accuracy is the culmination of both the *Linear Dimension Accuracy* and the *Gross Weight* KPIs. If any linear dimension or gross weight is inaccurate, the case and its contents are considered inaccurate.

7.4 ATTRIBUTE AUDIT SCORING

The supplier must achieve a score of **90%** for *Overall Accuracy* (for the item and case), *Pack Quantity*, *Country of Origin*, *Declared Net Content*, *TI-HI*, and *Brand Name* for both the case and the item to receive a “passing score” for *Pillar 3: Attribute Audit*.

If a supplier scores between 70% - 89% on the Attribute Audit for either the case or the item, the supplier is provided a second opportunity to pass an audit:

- A reconciliation process will be provided and a second audit will be scheduled within 120 days.
- Submission for the second audit will be exception based (i.e., only the packaging type(s) that failed the audit will need to be submitted). The auditor is responsible for selecting the item(s).
- If the supplier fails the second audit, the supplier will need to re-apply for certification (and redo the Pillar 1 and Pillar 2 assessments).

If a supplier scores less than 70% on the Attribute Audit for either the case, the item or both, the supplier will need to re-apply for certification (and redo the Pillar 1 and Pillar 2 assessments).

For more information on *GS1 GTIN Allocation Rules* please go to: www.gs1.org/1/gtinrules/

7.5 ATTRIBUTE AUDIT SAMPLE SIZE

The table below presents the representative sample sizes upon which *Attribute Audits* will be based. The actual sample size for each audit will vary by the number of items in a category and the levels of hierarchy.

NUMBER OF ITEMS IN CATEGORY	SAMPLE SIZE / UNIQUE GTINs		
	1 LEVEL	2 LEVELS	3 LEVELS
100	40	80	120
200	50	100	150
300	55	110	165
400	60	120	180
500	60	120	180
1000	64	128	192
2000	66	132	198
4000	67	134	201

Table E. Attribute Audit Sample Size

Sample size is based upon 90% confidence rate and 10% confidence interval (margin of error).

The products to be audited will be selected by the auditing body, and will be representative of the category and packaging types.

Detailed scorecard data is shared directly with the brand owner for which the assessment was conducted. Individual scores will not be shared beyond this use.

8 APPLYING FOR CERTIFICATION

- An organization can apply to GS1 US or a certified Solution Partner for certification.
- There are several options for how an organization can become certified depending upon its structure, including Category, Business Unit, Business Process, and Business System. The supplier itself determines how the organization will become certified (e.g., single category, all categories at once, etc.).
- Organizations with centralized business processes and business systems will only need to be certified once through the *Data Governance Process* pillar. If an organization has disparate processes and systems, each process/system will need to be certified.
- The *Attribute Audit* will be conducted by business unit and/or category so that a sample of all packaging types is audited, and the audit is based upon a representative sampling of new items and existing items (per the schedule in Section 7.5).
- Certification is valid for three years with yearly interim audits.

9 MAINTAINING CERTIFICATION & RECERTIFICATION

9.1 INTERIM ATTRIBUTE AUDITS & RECERTIFICATION

Certification is valid for three years during which there are yearly *Interim Attribute Audits*. In Year 4, the supplier applies for recertification.

9.1.1 KEY FEATURES

- *Interim Attribute Audits* use the **same process and requirements** as *Attribute Audits* for initial certification described in this document (e.g., KPI attributes, criteria, scoring, etc.). **Only the sample size and the sample pool are different:**
 - The sample size for the *Interim Attribute Audits* is half the size of the initial audit. *(The premise is that once the supplier achieves initial certification, the subsequent audits serve to verify that the Data Governance Process and the Education and Training Protocol are still valid.)*
 - The sample pool for *Interim Attribute Audits* are as follows:
 - Year 1: representative of the top 20% of sales revenue plus new items.
 - Year 2: representative of the top 50% of sales revenue plus new items.
 - Year 3: representative of the entire portfolio. *(The incrementally larger sample pool allows suppliers to focus on cleaning up the data of existing items.)*
- In Year 4, the supplier applies for recertification and undergoes assessment for all three pillars (*Data Governance Process, Education and Training Protocol, and Attribute Audit*).
 - Recertification assessments for the three pillars use the same criteria, sample sizes, etc. as in the initial certification requirements laid out in this document.
 - The physical audits for re-certification will take place at different facilities than the prior location (if possible).
- In the subsequent years following the Year 4 recertification, the sample for each *Interim Attribute Audit* will be representative of the entire portfolio.

9.1.2 SCORING

Scoring for *Interim Attribute Audits* is the **same** as scoring for *Attribute Audits* for initial certification as described in this document. Specifically:

- The supplier must achieve a score of **90%** for *Overall Accuracy* (for the item and case), *Pack Quantity*, *Country of Origin*, *Declared Net Content*, *TI-HI*, and *Brand Name* for both the case and the item to receive a “passing score.”
- **If a supplier scores between 70% - 89% for either the case or the item**, the supplier is provided a second opportunity to pass the audit:
 - A reconciliation process will be provided and a second audit will be scheduled within 120 days.
 - Submission for the second audit will be exception based (i.e., only the packaging type(s) that failed the audit will need to be submitted). The auditor is responsible for selecting the item(s).
 - If the supplier fails the second audit, the supplier will need to re-apply for certification (and redo the Pillar 1 and Pillar 2 assessments).
- **If a supplier scores less than 70% for either the case, the item or both**, the supplier will need to re-apply for certification (and redo the Pillar 1 and Pillar 2 assessments).

Note: A methodology to allow demand-side trading partners to provide feedback on accuracy of any supplier’s data will be determined.

9.2 AUDIT & RECERTIFICATION SCHEDULE

For clarity, the table below presents the schedule and details for Years 1 – 8 after receiving initial certification:

YEAR	PROCESS	SAMPLE POOL	SAMPLE SIZE	EVALUATION
	<i>Initial Certification</i>	Initial assessment of all three pillars of data quality (<i>Data Governance Process</i> , <i>Education and Training Protocol</i> , and <i>Attribute Audit</i>) as described in this document.		
YEAR 1	<i>Interim Attribute Audit</i>	Representative of the top 20% of sales revenue plus new items	Half the size of the initial audit	<i>Attribute Audit</i> using the same criteria as in the initial certification audit
YEAR 2	<i>Interim Attribute Audit</i>	Representative of the top 50% of sales revenue plus new items	Half the size of the initial audit	<i>Attribute Audit</i> using the same criteria as in the initial certification audit
YEAR 3	<i>Interim Attribute Audit</i>	Representative of the entire portfolio	Half the size of the initial audit	<i>Attribute Audit</i> using the same criteria as in the initial certification audit
YEAR 4	<i>Recertification</i>	Assessment for all three pillars (<i>Data Governance Process</i> , <i>Education and Training Protocol</i> , and <i>Attribute Audit</i>) using the same criteria, sample sizes, etc. as in the initial certification requirements laid out in this document.		
YEAR 5	<i>Interim Attribute Audit</i>	Representative of the entire portfolio	Half the size of the initial audit	<i>Attribute Audit</i> using the same criteria as in the initial certification audit
YEAR 6	<i>Interim Attribute Audit</i>	Representative of the entire portfolio	Half the size of the initial audit	<i>Attribute Audit</i> using the same criteria as in the initial certification audit
YEAR 7	<i>Interim Attribute Audit</i>	Representative of the entire portfolio	Half the size of the initial audit	<i>Attribute Audit</i> using the same criteria as in the initial certification audit
YEAR 8	<i>Recertification</i>	Assessment for all three pillars (<i>Data Governance Process</i> , <i>Education and Training Protocol</i> , and <i>Attribute Audit</i>) using the same criteria, sample sizes, etc. as in the initial certification requirements laid out in this document.		

Table F. Schedule for Interim Attribute Audits & Recertification

10 RECONCILIATION PROCESS

Organizations will have an opportunity to reconcile any concerns and submit back for certification within 120 days of the audit. If they are successful in reconciling the issues, the score will be adjusted accordingly. If they are unsuccessful, it is up to the discretion of the supplier as to when they want to reapply for certification.

11 APPEALS PROCEDURE

An organization will have the opportunity to appeal the results of the audit to GS1 US for up to 30 days beyond the reconciliation process. If necessary, additional assessments will be held to resolve the appeal. If the appeal is successful, there will not be incremental cost to the supply-side partner.

12 METHODOLOGY: EXECUTING THE PROCESS

12.1 ASSESSMENT PROCESS

The program assessments can be performed by a certified third party or by GS1 US. The possibility of self-assessment is under review and will be piloted with a limited number of participants.

12.2 THIRD PARTY CERTIFICATION

GS1 US will certify interested third parties in the GS1 US National Data Quality Program protocol. GS1 US provides this certification as a convenience and this does not constitute or imply an endorsement, recommendation or favoring by GS1 US of any identified companies, products or services. GS1 US does not warrant or guarantee any of the products or services identified, nor does it assume any legal liability or responsibility with respect to them.

Successful certification will result in the organization's name being placed on the GS1 US website as a certified partner. Certified third parties will be able to conduct the assessments for all three pillars. (The certified third party will need access to the physical product in order to conduct the Attribute Audit.) GS1 US will conduct the continuing education programs and re-certification process for third party auditors.

12.3 THE ROLE OF GS1 US

In addition to the development and execution of the *GS1 US National Data Quality Program*, GS1 US will play an integral role in the following areas:

- Program Governance & Execution
- Development & Maintenance of Best Practice Guidance
- Education & Training
- Scorecard Execution
- Solution Partner Certification

13 GLOSSARY

TERM	DESCRIPTION
BRAND NAME	The recognizable name used by a brand owner to uniquely identify a line of trade item or services. This is recognizable by the consumer. This is the brand on the package, not the name of the owner of the brand.
CERTIFICATION PROGRAM	The process of conveying a mark or “seal of compliance” from an authority to a vendor’s products and/or services that passes a pre-determined level of conformance to standards. Certification also includes the rules for using and maintaining the mark and how the mark is communicated.
COUNTRY OF ORIGIN	The country code(s) in which the goods have been produced or manufactured.
DATA GOVERNANCE	A process to manage the actions, methods, timing, and responsibilities for supporting master data within an organization.
DATA OWNER	An individual within an organization that is accountable for written control mechanisms documenting GTIN validation procedures. This person should be familiar with the GTIN allocation rules.
DATA STEWARD	This individual is the subject matter expert for the attributes most closely tied to their role in the company (e.g., packaging engineer owns packaging measurements and weights; marketing owns the assignment of brand name) and responsible for ensuring all aspects of the data is completed. This person should be intimately familiar with the GTIN allocation rules.
DATA SYNCHRONIZATION	The electronic transfer of standardized product and location information between trading partners and the continuous synchronization of that data over time.
DECLARED NET CONTENT/UNIT OF MEASURE	The amount (size or total) of trade item contained by a package usually as claimed on the label (e.g., 10 lbs of potatoes in a bag, or 2 each of watermelons in a case).
DEPTH	Depth is defined in terms of a consumer trade item and non-consumer trade item: <ul style="list-style-type: none"> • Consumer Trade Item – the distance from the default front to the back • Non-Consumer Trade Item – the longer side of the natural base of the trade item Additional information can be found in the GS1 GDSN Package Measurement Standards - http://www.gs1us.org/resources/standards/package-measurement-standards
DIMENSION ACCURACY	The physical dimensions at all levels of the hierarchy have accurate and complete values for the dimensions listed below and are based on the GDSN Package Measurement Rules (including tolerances). The dimensions need to be associated with a valid Unit of Measure (UoM).
ELECTRONIC DATA INTERCHANGE (EDI)	The computer-to-computer exchange of structured information, by agreed message standards, from one computer application to another by electronic means and with minimal human intervention.
FOUNDATIONAL ATTRIBUTE	Attributes that require a new GTIN assignment once the GTIN is shared with a trading partner, and that have been changed (independent of which stage in the product development process - pre-production or production) with adherence to the GS1 GTIN Allocation Rules. Foundational Attributes include: <ul style="list-style-type: none"> • Brand Name • Declared Net Content / Unit of Measure • GTIN • Pack Quantity

TERM	DESCRIPTION
FUNDAMENTAL ATTRIBUTE	<p>Attributes not requiring new GTIN assignment if a change occurs only in the pre-production stage. Once in production, the GS1 GTIN Allocation Rules must be followed.</p> <p>Fundamental attributes include:</p> <ul style="list-style-type: none"> • Dimensions – Case Level (length / width / height) • Dimensions – Inner Pack (if shared / applicable) • Dimensions – Item Level (if shared / applicable) • TI / HI • Country of Origin • Gross Weight / UoM
GDSN PACKAGE MEASUREMENT RULES	Rules for the global, unambiguous definition of nominal measurement attributes of product packaging to facilitate communication of the same for retail and non-retail products from the consumer unit to the case level and all intermediate packaging levels in between.
GLOBAL DATA SYNCHRONIZATION NETWORK (GDSN)	The GS1 Global Registry and a network of interoperable, certified Data Pools that enable data synchronization per GS1 System standards.
GLOBAL STANDARDS MANAGEMENT PROCESS (GSMP)	The procedures, methods, and practices that develop and maintain GS1 System standards. GS1 manages the Global Standards Management Process.
GLOBAL TRADE ITEM NUMBER (GTIN)	The globally unique GS1 System identification number for products and services. A Global Trade Item Number may be 8, 12, 13, or 14 digits in length, represented as GTIN-8, GTIN-12, GTIN-13, and GTIN-14 respectively.
GROSS WEIGHT	Gross weight includes all packaging materials of the trade item. At pallet level, the trade item includes the weight of the pallet itself. The weight has to be associated with a valid UoM.
GTIN ALLOCATION RULES	GTIN Allocation, and the barcoding of the GTIN, is a technical process the rules for which are laid down in the GS1 General Specifications.
HARMONIZATION	<p>The practice of calculating product dimensions by using one of the following methods:</p> <ul style="list-style-type: none"> • One item having several varieties is packaged the same. The item is measured and the dimensions are applied to all of the varieties of the same size. • An item is measured at the lowest level (i.e., each) and the subsequent levels are calculated based upon the number of “eaches” at each level throughout the hierarchy.
HEIGHT	<p>Height is defined in terms of a consumer trade item and non-consumer trade item:</p> <ul style="list-style-type: none"> • Consumer Trade Item – the distance from the default front base to the top • Non-Consumer Trade Item – the measure of the trade item from the natural base to the top <p>Additional information can be found in the GS1 GDSN Package Measurement Standards - http://www.gs1us.org/resources/standards/package-measurement-standards</p>
INITIAL ATTRIBUTES	Key item attributes established across all industry verticals to respect the GTIN Allocation Rules. They are further categorized into Foundational and Fundamental attributes.
INTERNAL SETUP	The period of time prior to initial production (also referred to as innovation or concept phase).
MASTER DATA GOVERNANCE ENTITY	An individual or group which is responsible for data governance and held accountable for the quality of the data.
PACK QUANTITY	Information shared for each level of the hierarchy matches what is contained in the package.
PUBLISH	To prepare and issue data for distribution to one or a group of trading partners. A function within the data synchronization process whereby the Data Source grants visibility of Item, Party, and partner profiles, including party capabilities data to a given list of parties, identified by their Global Location Numbers, or to all parties in a given Market Group. It also will trigger the matching process that is the precursor to the distribution of data.

TERM	DESCRIPTION
TI - HI	TI is the number of pieces (cartons) per tier or layer on the pallet (sometimes called blocks). HI is the number of tiers or layers per pallet.
WIDTH	Width is defined in terms of a consumer trade item and non-consumer trade item: <ul style="list-style-type: none">• Consumer Trade Item – the distance from the default front left to right• Non-Consumer Trade Item – The shorter side of the natural base of the trade item Additional information can be found in the GS1 GDSN Package Measurement Standards - http://www.gs1us.org/resources/standards/package-measurement-standards
UOM	Unit of Measure

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