



The Global Language of Business

# Framework for consistent GTIN allocation

## GS1 Architecture Finding

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## 1 Executive Summary

In an era of digital transformation, a new framework of terminology, roles & responsibilities and best practices is needed as input to GSMP teams who are challenged with how to best extend and optimise the GS1 System for the consistent and efficient allocation of GTIN.

This document sets forth framework and includes recommendations on the use of the framework in the context of upcoming GSMP work to adapt the GS1 General Specifications (incl. the GTIN Management Rules).

Today in the GS1 General Specifications, responsibility for allocating Global Trade Item Numbers (GTINs) is **associated with a specific actor** (the “brand owner” who “owns the specifications”) rather than being **associated with a specific responsibility** (the warranty of trade item declarations).

This is problematic because a brand owner does not always have the responsibility to allocate a GTIN. It is also problematic because the term brand owner does not always translate across all sectors, channels, and applications.

For that reason, and in consideration of expected upcoming work in GSMP, the GS1 Architecture Group (AG) proposes a framework for consideration by all GS1 standards groups into the future.

The three parts of the framework presented in this document are:

1. **Definitions** that are needed to clarify existing standards language and make section 4 of the GS1 General Specifications more extensible.
2. **Roles & Responsibilities Matrix** – to avoid confusion with “industry terminology” and to clarify what role owns the process of key allocation (specific for GTIN in this document)
3. **Guiding Principles** for Key Allocation (specific for GTIN in this document)

For now, the treatment of other Keys is outside the scope of this document. At the time of producing this document, the framework was validated to ensure that it did not conflict with current standards for allocation of other GS1 keys in the GS1 system.

The principal recommendations in this document are:

1. A term such as “Trade Item Warrantor<sup>1</sup>” should be defined and used consistently across GS1 standards to define the party responsible for GTIN allocation.
2. Responsibility for GTIN allocation should fall upon the party that warrants the Trade Item Declarations about a trade item to which they apply a GTIN. *If you’re the party identifying a trade item with a GTIN, then you are the party warranting the “Trade Item Declarations”.* Depending on the context (e.g., sector, channel, application), terms for supply chain actors should be used to describe which actor is the Trade Item Warrantor.
3. Responsibility for GTIN allocation should be guided by a set of principles which are applicable to any sector, channel, or application. Practical implications of these principles should be defined to enable consistent implementation of GTIN Management rules.

## 2 Background of the Request

The GS1 Architecture Group (AG) has been asked to provide a framework, principles and/or definitions that should be considered by existing and future GSMP groups to enable consistent development and expression of key allocation rules, in consideration of the fact that scenarios exist today for which:

- rules are not defined for all situations and
- the “actors” are not always contemplated within the GS1 General Specifications.

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<sup>1</sup> From Merriam-Webster dictionary:

**Definition of “warrantor”:** one that warrants or gives a warranty.

**Definition of “warranty”:** a collateral undertaking that a fact regarding the subject of a contract is or will be as it is expressly or by implication declared or promised to be.

The AG will deliver a minimum viable framework to allow working groups to express rules in a manner that is clear and unambiguous. Guidance will focus on GTIN only in a first phase but the guidance will be tested against additional GS1 keys to ensure plausibility for all.

The AG will avoid defining allocation rules themselves (as this is the role of existing and/or future GSMP groups).

In 2012, the GS1 AG looked at the term “Brand Owner”. The resultant Finding illustrated that **multiple parties (e.g., brand owner, manufacturer, specification owner, importer, distributor) could issue and allocate a GTIN.**

[https://www.gs1.org/docs/architecture/2012\\_12\\_05\\_RFF\\_Brand\\_Owner\\_Terminology.pdf](https://www.gs1.org/docs/architecture/2012_12_05_RFF_Brand_Owner_Terminology.pdf)

Today, the GS1 General Specifications Glossary defines:

<b>Allocation</b>	The association of an issued GS1 Prefix, GS1 Company Prefix, or GS1 identification key to its corresponding entity or object in accordance with the GS1 rules and policies.
<b>Issuance</b>	The generation of a GS1 Prefix, GS1 Company Prefix, or GS1 identification key in accordance with GS1 rules and policies by GS1 or a GS1 Member Organisation.
<b>Trade Item</b>	Any item (product or service) upon which there is a need to retrieve predefined information and that may be priced, or ordered, or invoiced at any point in any supply chain.

The GS1 General Specifications Glossary also contains definitions that pertain to parties responsible for “managing” or “issuing” GS1 keys. These are found below:

<b>Brand Owner</b>	The organisation that owns the specifications of a trade item, regardless of where and by whom it is manufactured. The brand owner is normally responsible for the management of the Global Trade Item Number (GTIN).
<b>GS1 Company Prefix Licensee</b>	The entity to which a GS1 Company Prefix is licensed.

The GS1 General Specifications Glossary also lists other parties involved in the consumption, safety, effectiveness, production, or provision of a trade item. They are found below:

<b>customer</b>	The party that receives, buys, or consumes an item or service.
<b>Responsible entity</b>	The party responsible for the safety and effectiveness of the medical trade item at a moment in time in its lifecycle, according to the approved regulatory file (including labelling) and regulatory/legal/professional obligations associated with the medical trade item. (e.g., brand owner, repackager, hospital pharmacy, etc.)
<b>supplier</b>	The party that produces, provides, or furnishes an item or service.

And beyond the GS1 General Specifications Glossary, there are terms throughout Section 4 of the General Specifications that could be considered outdated and/or in need of review.

In an era of digital transformation, a new framework of terminology to discuss what parties are responsible for the allocation of GTIN is needed (and, indeed, this framework of terminology would likely be needed for revisiting the GS1 General Specifications related to allocation of other Keys).

For example, basic concepts in physical-world commerce (e.g. one trade item, one GTIN / one GTIN on any one trade item package) often manifest themselves very differently in online commerce (e.g. distribution of non-branded trade items, offers that include bundles of trade items from multiple ‘brand owners’, or bundles of a trade item with a warranty or assembly services in addition to the trade item, but offered as one “trade item”).

## 2.1 Scope of this Request for Finding

As the GS1 GSMP community enters this new era of digital transformation, they will be convening an MSWG on the topic of GTIN allocation and management for many situations that have not been contemplated in the GS1 General Specifications or in the GTIN Management Standard. Because this effort will require the discussion of novel relationships between and across actors that have not yet been defined in the GS1 System, it has been requested that the GS1 Architecture Group share, as input into this upcoming work, their perspective on the evolving definitions, actor role and responsibilities, and guiding principles for GTIN allocation. This scope will include an exercise to test the applicability of the approach for other GS1 Identification Keys, but detailed work on other keys will be subject to a future Request for Finding (RfF) (see Section 2.2).

## 2.2 Future Request for Finding Scope

A number of expanded key allocation topics have been raised and may deserve attention even if they are less time sensitive to resolve. These topics include:

- Should the framework (definitions, roles and responsibilities, guiding principles) extend to allocation rules of other GS1 Keys?
- Should creating aliases for definitions by channel (e.g., retail, healthcare, marketplace) and/or entity (e.g., asset, trade item) be of value?
- Is there a generic framework that could allow our SMGs and MSWs to modernise GS1 identification key management standards in a cohesive and congruent manner? (and, of course, once standards are evolved, services and education/training offerings would need to be modernised)
- Should existing Allocation Rules that could/do apply to multiple GS1 Keys (e.g., partial mergers and acquisition, spin-offs) better serve the broader needs of the GS1 System if their wording was not so closely linked with GTIN?

## 3 Recommendation and Implications

A 3-part framework is proposed to assist GSMP communities with the evolution and improvement of the rules around GTIN Allocation (e.g., Section 4 of the GS1 General Specifications). The framework includes:

1. **Definitions** that are needed to clarify existing standards language and make section 4 of the GS1 General Specifications more extensible
2. **Roles and Responsibilities Matrix** – to avoid confusion with “industry terminology” and to clarify what role owns the process of key allocation (specific for GTIN for this document)
3. **Guiding Principles** for Key Allocation (specific for GTIN for this document)

The framework presented in Sections [3.1](#) to [3.3](#) is intended to be used holistically when faced with the challenge of adapting the rules related to Allocation of GTIN (e.g. Section 4 of the GS1 General Specifications). Section [3.4](#) discusses the implications of utilising the framework.

### 3.1 Definitions

New definitions will be needed to bring clarity to how trade items are defined and how offers about trade items are made (in both physical and online commerce). Where possible, GSMP groups should seek to align new definitions in GS1 Standards with other existing definition standards, such as those that are available from ISO. The below definitions are intended to bring context to this Request for Finding and as input to the work of future GS1 standards working groups.

These first two proposed definitions are intended to more broadly and more accurately characterise the party that assumes responsibility for the declarations related to AND for the open supply chain identification of a trade item.

- **“Trade Item Warrantor” (or GTIN Allocator could also be used instead)** - The party that warrants the Trade Item Declarations about a trade item to which they allocate a GTIN (“Trade Item Warrantor” should be made functionally-equivalent to “Brand Owner” in the GS1 General Specifications). This is the party who is the licensee of the GTIN applied to a specific trade item. *If you’re the party identifying a trade item with a GTIN, then you are the party warranting the “Trade Item Declarations”.*
- **“Trade Item Declarations”** – The set of all information warranted about a trade item that is made available for sale (inclusive of manufacturer warranty, ingredients, instructions for use, specifications, contents, certifications, *predefined characteristics* and other information). For a trade item, *this is all of the information that’s on the label, in the original packaging and on the “extended label”.* For a service, *this is all of the information warranted about the service that is made available for sale.*

The next three definitions introduce the concepts of “seller” and of “offer”, then associate these concepts with “declarations” that are made about the actual offer of something for sale either online, in a physical store or in a B2B environment.

- **“Seller”** – The party that warrants/owns the Offer of a trade item.
- **“Offer”** – The act of making a trade item available for sale, which requires a Seller to agree to and/or make available the Trade Item Declarations made by the Trade Item Warrantor.
- **“Offer Declarations”** – The set of all information declared by (or agreed to by) a seller about a trade item (inclusive of price, availability, terms of sale, other descriptions made by the seller, claims, condition, shipment and other information).

These last few definitions are established for the purpose of disambiguating phrases that have been used over the last years to mean various things. The below definitions are intended for use within GS1 Standards, and do not necessarily correspond to “industry language”. Converting the content of any resultant standard into industry-facing messaging has not been contemplated by the Architecture Group in this Request for Finding.

- **“White-Label Product”** – A trade item (that does not have existing packaging marked with a GTIN, e.g. a product that is unidentified). *NOTE: This definition could possibly be made equivalent to the phrase “Non-Branded Products” in the GS1 General Specifications in a future GSMP working group.*
- **“Condition”** – The state in which a trade item may be classified, including the conditions of being “new”, “used”, “refurbished” or “remanufactured” (list of conditions is not an exhaustive list).
- **“Physical Bundle”** – A collection of trade items physically combined into a single trade item, thus creating a new trade item.
- **“Virtual Bundle”** – A listing/selling practice that combines (virtually) multiple products and/or services into a number of offers to maximise sales.

### 3.2 Roles & Responsibilities Matrix

One of the areas of greatest confusion within the GS1 Standards is the topic of who has the responsibility to allocate GS1 Identity. In the case of trade item identity (GTIN), the matrix of responsibility is as shown below.

This matrix is a novel way of breaking down supply chain process steps, and has been purposefully designed to avoid common, confusing terms such as “brand owner” or “retailer”. Indeed, the below process steps are intended to be fully relevant across both physical and online commerce, as well as B2B commerce.

Role	Responsibility	Examples	Responsibility for GTIN allocation
Specifying	Warrants the trade item Declarations and assigns a GTIN to the trade item.	Manufacturer, Retailer, Marketplace Seller, Wholesaler, Raw material supplier, Medical device manufacturer, Private label vitamin supplier, Pet shampoo manufacturer, Pineapple grower	Full responsibility for GTIN allocation, (whether delegated to contract manufacturer or not) as the Trade Item Warrantor is the most upstream party that warrants the Trade Item Declarations, which include all “specifications”.  <b>End state: Specified/defined goods.</b>
Manufacturing	Produces and packages a trade item to specifications.	Raw material supplier, Medical device manufacturer, Private label vitamin supplier, Pet shampoo manufacturer, Pineapple grower, Phone charger in branded box, Phone charger in white box, repair service offering.	None, as the process of manufacturing is not the process of warranting a trade item declaration.  <b>End state: Finished goods.</b>

Role	Responsibility	Examples	Responsibility for GTIN allocation
Transporting	Moves a trade item from here to there.	Long haul freight company, Local delivery truck, Trains, Planes, Ships, Courier	None as the process of transporting something does not equate to trade item ownership. <b>End state: Moved goods.</b>
Storing	Stores a trade item from now to then.	Warehouse, Cold storage facility, Distribution Centre	None as the process of storing something does not equate to trade item ownership. <b>End state: Stored goods.</b>
Selling	Offers a trade item or trade item bundle or kit, warrants their content, function, and packaging, provides directions for its consumption or use, and/or establishes terms, conditions, price.	Manufacturer, Retailer, Marketplace seller, Hospital, Pharmacy, Importer, Distributor, Wholesaler, Service providers	None as the process of selling something does not equate to trade item ownership. <b>End state: Sold goods.</b>
Trading/Procuring	Procures a trade item or trade item bundle or kit for selling and/or the manufacturing of another trade item.	Manufacturer, Retailer, Marketplace seller, Hospital, Pharmacy, Importer, Distributor, Wholesaler, Government agency	None as the process of buying something does not require a GTIN. <b>End State: Procured Goods.</b>
Buying	Purchases a trade item or trade item bundle or kit for consumption and/or use	Consumer, Patient	None as the process of buying something does not require a GTIN. <b>End State: Purchased Goods.</b>

In ALL cases, the party who warrants the trade item declarations is the party who assigns the GTIN to a trade item. With that action, the party becomes the “Trade Item Warrantor”.

### 3.3 Guiding Principles

The aforementioned definitions and roles/responsibility matrix, once implemented, enable the clear expression of a number of guiding principles that can be used to develop appropriate rules for GTIN Allocation. Some of these guiding principles are:

1. GTIN is to be applied at the earliest point in any trade item’s journey after which a “Trade Item Warrantor” has been established.
2. GTIN is changed at any point in any trade item’s journey when:
  - The GTIN Management Rules or GS1 General Specifications say so **OR**
  - When the Trade Item Warrantor changes (in traditional language, this is when the Brand Owner changes) **OR**
  - At the discretion of the Trade Item Warrantor.
3. Any party can and often will have multiple roles (see 3.2) for any one specific trade item. For example, the Trade Item Warrantor is solely responsible for Trade Item Declarations. The Seller is solely responsible for the “offer declarations”. The Trade Item Warrantor and Seller roles may be performed by the same party (e.g., private label trade item) or different parties (e.g., branded trade item).
4. Any trade item for which there exists an open supply chain offer should have a unique GTIN.
5. No downstream party should assign a different GTIN to a trade item that already has a GTIN.

### 3.4 Practical Implications of the Framework

If the 3-part framework is implemented by future GSMP working groups as written in this RfF, there exist a number of practical implications, all of which are fully in-line with the Definitions, Roles/Responsibilities and Guiding Principles. Some of those implications are:



- Downstream actors who choose to take responsibility for the Trade Item Declarations of a trade item shall assign a GTIN to the trade item (because they are becoming the “Trade Item Warrantor”).
- A party who combines multiple trade items into a new trade item (e.g. a physical bundle) shall assign a GTIN to the new trade item, as they are taking responsibility for the Trade Item Declarations of the “physical bundle”.
- A party who creates a “virtual bundle” offers shall ensure that all discrete trade items in the virtual bundle have a unique GTIN.
- The topic of “condition” (e.g. refurbished, used, remanufactured) is considered an “offer declaration”, which shall be declared by a Seller (not by a Trade Item Warrantor).
  - **NOTE:** Such a condition declaration, by itself, does not necessarily require a change in GTIN for any particular trade item. In certain sectors, such as Healthcare, such a condition declaration does require a new GTIN. It is expected that this topic will be part of a future MSWG.

## 4 Use of Framework/Definitions by GSMP Working Groups

For future GSMP groups: There will need to be a number of changes to the GS1 General Specifications then other standards to make use of the proposed 3-part framework. The changes that should be contemplated are at least:

1. Inclusion of any required new definitions into the GS1 General Specifications and use of new terms in a rewritten section 4.
  - Consider harmonisation of terminology for “Brand Owner” throughout the document. Consider Trade Item Warrantor as a less confusing replacement.
    - Also, consider how to harmonise the term “GS1 Company Prefix licensee” that exists in the GS1 General Specifications glossary.
  - Create a very similar section for “Sellers” as is Section 4.3.3.1.
2. Establish the “Roles and Responsibilities” component of the framework in the appropriate part of section 4, noting that there would likely be a different table for other Keys like GLN in the future.
  - Consider replacing/updating Section 4.3.3.1 (Responsibility for Branded Items).
3. Consider how the “guiding principles” impact how the existing rules in section 4 for GTIN should be adapted.
  - Consider harmonisation of the terms “White-Label Products” and “Non-Branded Products”.
  - Consider harmonisation of the terms “supplier” and “manufacturer” across GS1 standards.
4. Consider applying new terminology across GS1 standards, guidelines, websites, training materials, etc as they come up for review.