Global Product Classification (GPC)

Development & Implementation Guide

Issue 3, Oct-2012

Document Summary

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Log of Changes in Issue 3

Issue No.	Date of Change	Changed By	Summary of Change
1	Mar-2011	Mike Mowad	Initial Version
2	Jan-2012	Mike Mowad	Corrected Figure 2-3 (GPC Brick Attributes)
3	Oct-2012	Mike Mowad	Made process updates to section 5.6.1.3, section 5.6.2.4, Figure 5-2, and Figure 6-1.

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1. Introduction

The purpose of the GPC Guidelines is to provide a reference document for GPC development and implementation. It provides an overview of GPC along with its fundamentals & principles, rules, and the relationship to GDSN.

2. GPC Overview

The GS1 Global Product Classification (GPC) is a system that gives both sides of trading partner relationship a common language for grouping products in the same way. It ensures that products are classified correctly and uniformly, everywhere in the world. The term "product" as used throughout this guide refers mainly to physical products; however GPC is expanding into services as well.

The business objectives of GPC are to:

- Support buying programs by allowing buyers to pre-select groups of applicable products
- Provide a common language for category management, thus speeding up reaction to consumer needs
- Be a key enabler of the Global Data Synchronisation Network
- To be a Pivotal classification system between the information exchange parties

2.1. How it Works

GPC is a rules-based, four-tier classification system for grouping products. The four tiers are Segment, Family, Class, and Brick (with attributes and attribute values). A Brick identifies a category incorporating products (Global Trade Item Numbers (GTINs)) that serve a common purpose, are of a similar form and material, and share the same set of category attributes.

2.2. GPC Foundations

The foundation of GPC is called a "Brick;" GPC bricks define categories of similar products. Using the GPC brick as part of GDSN ensures the correct recognition of the product category across the extended supply chain, from seller to buyer. Bricks can be further characterised by Brick Attributes and attribute values.

Figure 2-1 GPC Foundation and Hierarchy
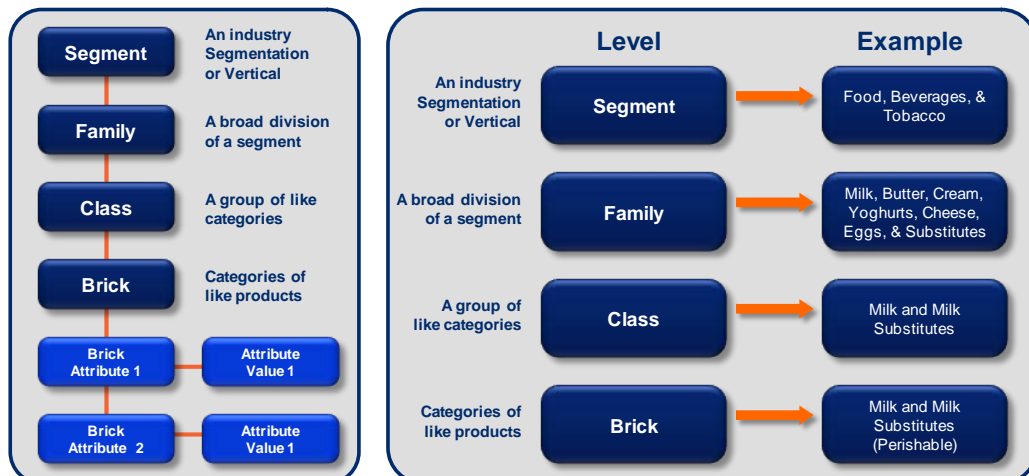
A Global Trade Item Number (GTIN) can only be assigned to one Brick.

Figure 2-2 GTIN / Brick Assignment
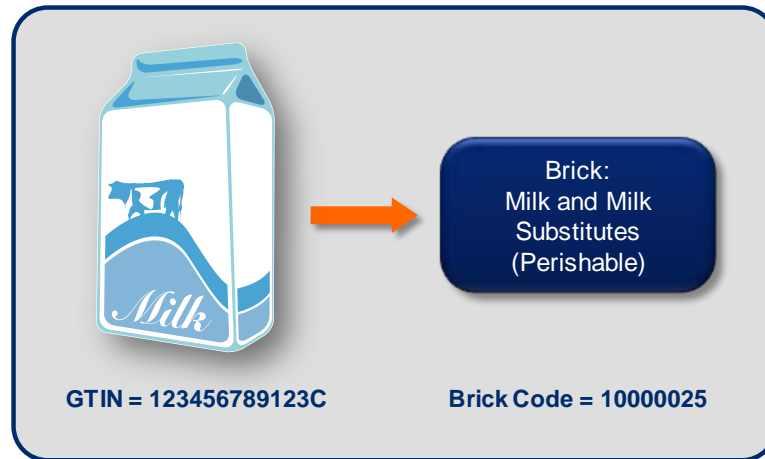
Using Attributes

Bricks can be further characterised using attributes where required.

Figure 2-3 GPC Brick Attributes
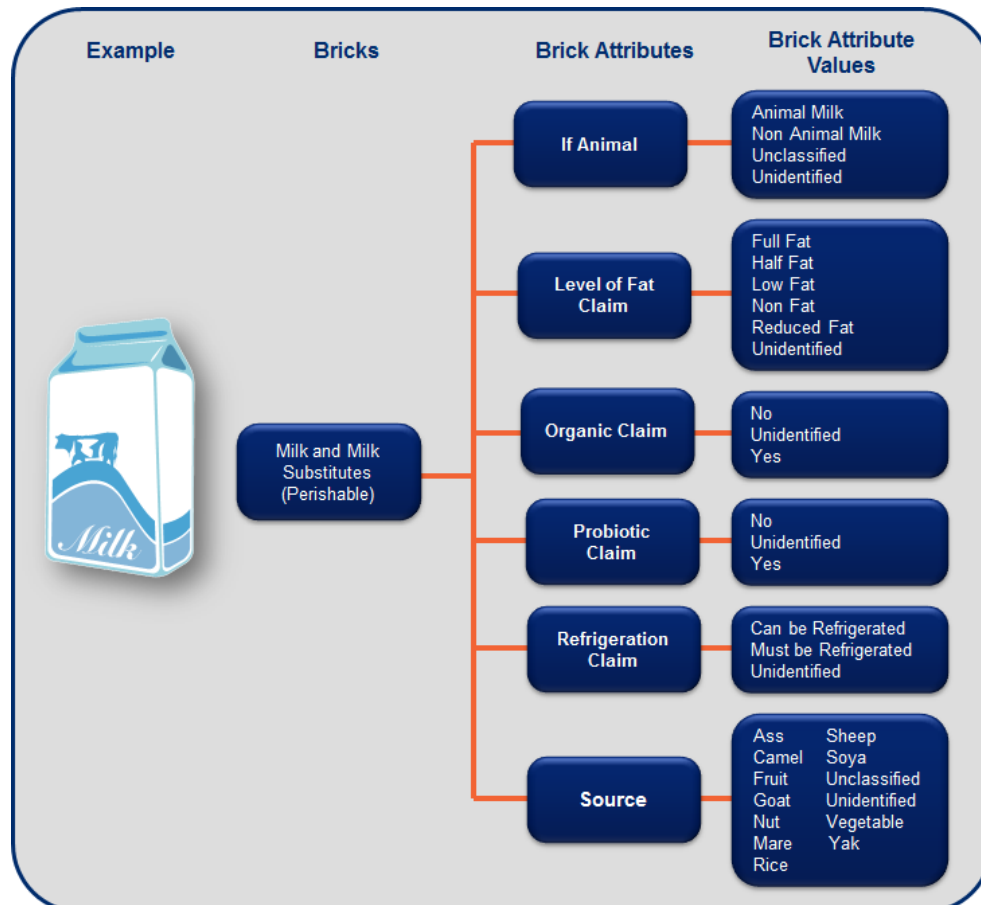
2.3. GPC Schema

The aim of the GPC Schema is to establish a flexible product classification schema, based on a comprehensive set of rules. GPC incorporates generic building blocks that transcend different business practises and multi-cultural barriers. It serves business-to-business needs for the functions of search, viewing, publication or subscription and data synchronisation through product group alignment.

2.4. What is the Role of GPC in GDSN?

GPC gives buyers and sellers a common language to group products the same way globally to ensure effective data synchronisation in the Global Data Synchronisation Network (GDSN). GPC enables the following processes:

- Item Registration

- Subscription

- Validation

- Search

- Publication/Subscription Match

Figure 2-4 GDCN Process enabled by GPCPC Brick Attributes
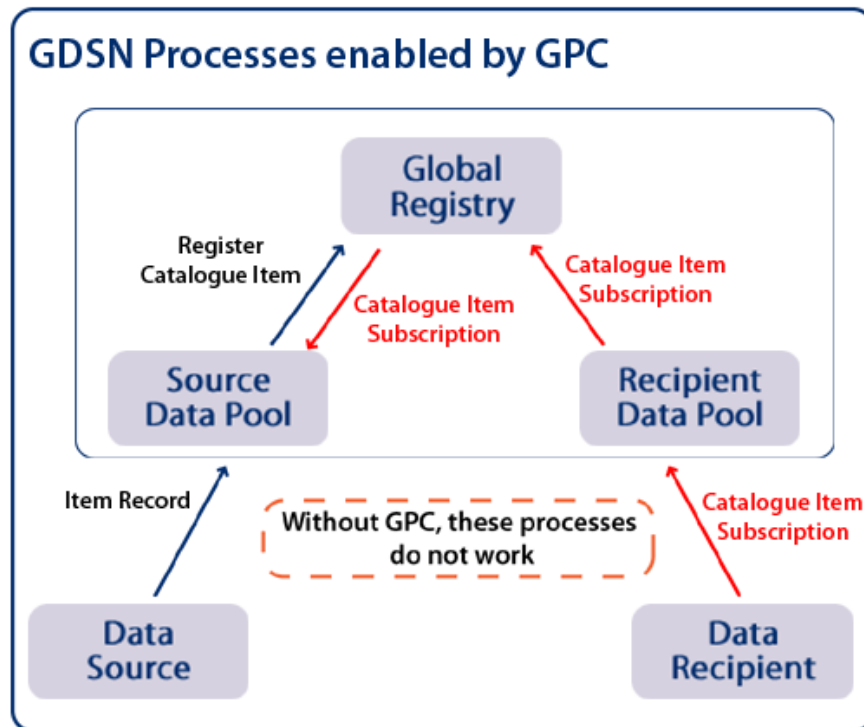
3. GPC Fundamentals & Principles

3.1. General Principles

1. Modularity and Flexibility of the classification structure in order to meet industry objectives for the GPC.

2. The logical grouping of bricks. The logic behind the schema should be transparent.

3. All categorized information must be universally applicable, i.e. the terminology used in the schema should not be culturally or nationally biased.

4. The schema is initially published in Oxford English with an explanatory glossary, which helps to clarify specific terms. Both the schema and the glossary are being translated to other languages, including US English.

5. Schema should facilitate the collection of relevant classification information, and allow it to be presented in a view acceptable by the industry.

6. The schema can cover all products in the supply chain

7. Any changes to the classification schema should be communicated in delta report.

3.2. Schema Principles

1. The GPC schema provides an optional four-tier hierarchy; segment, family, class and brick (GPC bricks may be used independently without the hierarchy). The hierarchy should be easy to understand/follow and balanced in order to facilitate search.

2. Each level of the schema is determined by rules and/or principles, and also industry decision. However, the rules applied differ depending on the hierarchy level.

3. The business rules apply to all levels or entities of the schema.

4. Each brick may be assigned one or more attributes; in turn each brick attribute has a set of associated mutually-exclusive brick attribute values.

3.3. Generic Business Rules

1. Application of clear and consistent structuring.

2. Use of non-culturally biased terms and spellings.

3. Application of a standardised naming convention.

4. Ensuring that each segment, family, class and brick has the necessary coverage and scope, with the ability to add appropriate new values as identified.

5. Avoid ambiguity through clear and concise definitions.

6. Provide a generic and standardised schema by ensuring that all products are uniquely placed.

7. A brick must, as far as is practical, contain products that can be characterised by the same set of attribute types relevant to the product. These attributes must meet the GPC attribute rules, and be part of the global standards. Where it is deemed not practical, the split of the product sets will be determined by industry input in accordance to GPC rules.

8. Products that are grouped and sold together (excluding kits) will be classified as variety packs. This applies to the class, family & segment level of the hierarchy. Variety Packs should only be created where necessary.

9. The schema will allow for the creation of a class-specific brick to capture product that cannot be immediately placed into an existing brick or products that the industry determines should not be broken out. These bricks are called 'Others'.

10. Grouping products based on what they physically are and not on their intended use.

3.4. Hierarchy Principles

1. Resulting bricks must be grouped coherently and logically.

2. Categorised information must be recognised globally.

3. Hierarchy groupings must be relevant and suitable for all search functionalities.

4. Hierarchy classification must be flexible.

5. The hierarchy should be created describing the characteristics of products (what they are) and not which channel / vertical they will be sold in or by intended use (how they are used). This will ensure products that are available in different channels / verticals can be classified and identified easily.

3.5. Brick Principles

The rules below are the comprehensive lists that have been used for bricks across verticals. These rules are not 'general' in the sense that they are not appropriate for all segments. They should be used where they are relevant. It should be ensured that these guidelines are applied in all relevant segments.

- Broad Area of Differentiation

- Broad Area of Application

- Products serve a Common purpose and use

- Processed to products using Similar Methods

- Products are of a similar form and material

- Split between powered vs. manual products

- Replacement parts will be classified in one brick per class

- Storage and Preservation

- Variety Packs

- Other

- Application & Function

- Number of Bricks must be manageable

- Share the same attribute types

- Brick names should be broad and stable over time

Note: To identify the appropriate rules by vertical and their explanation, please refer to the Appendix in section 9.

3.6. Attribute Principles

1. Globally applicable, hence not biased towards a region, culture or country

2. Relevant, recognised and understandable to users and industry (What benefit is it providing?)

3. Unique (intention, format, technicalities), objective and mutually exclusive – Includes both attributes and their values

4. Non-legislation specific. It is a piece of information required globally, but will be governed / legislated for locally (i.e., If Organic, Food Quality/Food Assurance Claims etc.)

5. High-level attribute - Would a user require or expect to search, subscribe or publish information through this view? The best method for collection is not necessarily how the User would publish (i.e., the ideal method of collection may require more granularity)

6. Single, comprehensive, and mutually exclusive code list

7. No ambiguity in any terms/words used

8. All GPC Attributes will be described to show what information they are seeking to identify. No Brick Variant will be used.

4. GPC Rules

4.1. Rules for Assessing GPC Attributes

A clear and unambiguous understanding of classification concepts is critical for the development and maintenance of a coherent classification system. Within the fields of electronic catalogues and data synchronisation there is confusion due to differences in terminology (e.g. property = attribute) or different understandings of concepts like identification, description, and classification. Typical terms that can cause misunderstanding when not precisely defined include ontology, taxonomy, classification system, data dictionary, vocabulary, thesaurus, characteristics, property, attribute, and feature.

Recommendations below relating to these terms and definitions do not imply that the other terms and definitions are erroneous or inferior. This section seeks to establish a consistent vocabulary for supporting the GPC, and recognises that other terms may be equally valid in the same or a slightly different context.

4.1.1. Overview

In a typical product catalogue there are fields that:

1. Identify with keys:

■ A product with a GTIN *(Which product am I selling?)*

■ Manufacturer / vendor / supplier with a GLN *(Who am I?)*

■ Target Market where a GTIN is for sale (TM) *(Where do I sell my product?)*

2. Further describe a product with Item attribute fields:

■ Brand Name

■ Dimensions (height, length, width etc.)

■ Weight (net weight, gross weight etc.)

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- Technical features

- Marketing features

- Price

3. Classify products

- Using GPC Brick Code as a key where each GTIN should be assigned to a GPC Brick code

  (What is the product group my individual product belongs to?)

  Classification provides further properties of the product group (Brick) with Brick Attributes and Brick Attribute Values

> **Note:** There should be NO FUNCTIONAL OVERLAP between Trade Item Attribute values and GPC Brick Attribute values. Although both may pertain to the same product property, the trade item attribute describes the product (e.g., Organic Code = "100% Organic") while the GPC Brick Attribute classifies that product using that same product property .(e.g., If Organic = "Yes").

- GTIN as a single product key is linked with GPC Brick code as a category (product group) level key.

- Trade item attributes can be used to define as many technical or marketing features as industry wishes without any theoretical limit. However, Brick attributes must be applicable to all products assigned to that brick. (There is currently a limit of 25 attributes per each brick).

- Trade item attributes are not to be confused with GPC Brick attributes. The goal of a Trade Item attribute is to describe the product as a commercial offering. The goal of GPC Brick Attribute is to establish a flexible global classification schema based on a comprehensive rule set that serves business-to-business needs for the functions of search, view, publication, subscription, mapping, and data synchronisation.

- Trade item attributes may support more than one value, whereas GPC brick attributes support one and only one value.

4.1.2. Attributes Identification, Description, Classification

Identification codes

Identification codes are the keys used to unambiguously identify a single specific item (in general). A common example is product identification using the GTIN. The one-to-one correspondence between the GTIN and the single product is very useful for recording and linking records of single products.

Description

The identification keys alone are not sufficient enough to provide the necessary details of the individual products. A set of data describes the specifications and structure of each single product. This is performed by a single product description where values are assigned to trade item attributes for each product.

Product Group Description

Product group characterization is assigning a product to a defined product category that groups similar products together based on common properties. Products are assigned to categories using a unique GPC brick code.

Note: Product description and product characterization both use properties, but with a different goal (description accurately denotes the properties of the product, while characterization denotes the properties of the category to which that product is assigned).

For each Brick, associated Brick Attributes and Brick Attribute Values are used to more granularly characterize products assigned to that Brick.

Classification

With classification, similar products are assigned to a defined product category. This is achieved by assigning a brick code to each product. Similar groups are members of yet a more general higher level category, and so on. This hierarchy can be navigated from top to bottom or bottom to top. The relationship of a single product to each hierarchy level is an information signal that is necessary for Item Discovery, Spend Analysis, and Product Awareness. In other words, both classification categories, represented by brick codes, and a hierarchical tree structure are useful for effectively searching and finding products and services with similar properties, which allows the source of expenditures to be tracked and potential trading partners to find products of interest to their buyers.

4.1.3. Commonalities and Differences

The upper part of Figure 4-1 (above the orange line) illustrates the product classification components.

- GPC Brick Code is the key to defining the essential characteristics of a product by assigning it to a product category

- Brick Attributes and Brick Attribute Values provide additional granularity by further defining smaller subgroups within the Brick.

- Segment, Family and Class are hierarchal elements that are used to group together common bricks.

The lower part of Figure 4-1 (below the orange line) highlights the Individual product level data

- GTIN identifies the single product

- GS1 Dictionary Description (GS1 GDD) describes the different individual product characteristics of a Trade Item.

- ITEM ATTRIBUTES can be broken down to

  □ Basic Data (like Brand Name, Dimensions, Weight etc.)

  □ Descriptive (like Colour, Product Description, Variant etc.)

  □ Other (like manufacturer's internal (not public) data)

Figure 4-1 Commonalities and Differences
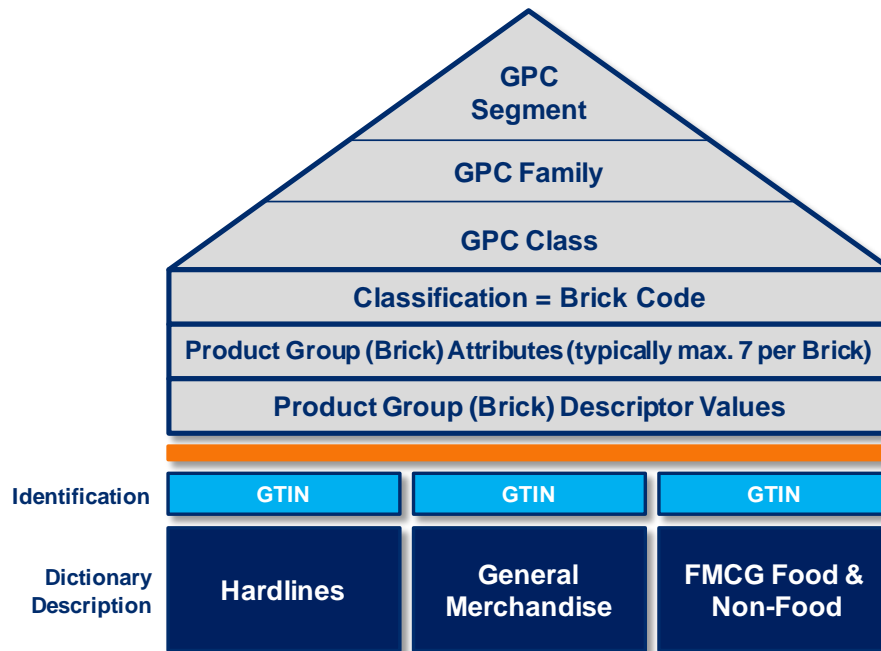
GPC is part of the GS1 standard package for Global Data Synchronisation Network (GDSN)

The GS1 standard package enables consistent use of the GS1 standards globally. The use of specific keys and their associated data carriers are supported by allocation rules, Bar Code or Radio Frequency Identification specifications and other regulations.

In a trading relationship, buyers and sellers can distinguish themselves (WHO) and their locations (WHERE) with the Global Location Number (GLN) key. They can identify their products (WHAT) with the Global Trade Identification Number (GTIN) key. The Target Market (TM) key determines the geographical area where the products are to be sold. The GPC Brick code key identifies the product group to which the individual product belongs.

The remaining components of the GS1 standard package are: Business Message Standards (Trade Item, Party, Price, Price Bracket); GDSN Process Standards (Item and Party Sync, Search, Validation, Publication, Subscription, Certification etc.); the Global Data Dictionary (GDD), which stores the business definitions and the different standard data formats such as XML, EANCOM and AIDC.

Single Product Identification and Description versus Product Group Classification

GTIN acts as a Single Product identification key and uniquely identifies a single product. There is a one-to-one relationship between the single product and the GTIN. Therefore identification codes can neither be aggregated nor used for reporting or category analysis purposes and do not allow comparisons among different manufacturers. In a typical catalogue, suppliers identify the GTIN, GLN and also describe products with additional components called Trade Item Attributes.

Note: ISO 13584 requests to use the word Property instead of Attribute or Characteristic.

Product Group keys (GPC Brick Code) are classification keys and are used to group similar products into common categories. A key property of classifications is that such groups can be clustered (bottom up) with others to create a hierarchy, i.e., any group within a classification can be divided into smaller groups based on common characteristics (top down).

Classification with GPC is the act of saying: "This product belongs to this Brick, this Brick has hierarchy components (Segment, Family and Class), and this Brick can be further described with a Brick Attribute set and the associated Brick Attribute Values".

GPC is a structure for product classification (taxonomy), not individual product identification (GTIN) or description (dictionary). In other words GPC provides a way to abstract rather than describe an individual product (which is handled by the trade item attributes).

Differences between Single Product and Category (Product Group) components

		SINGLE PRODUCT	CATEGORY (PRODUCT GROUP)
IDENTIFICATION KEY	**Key Name**	GTIN	GPC Brick Code
	Key Size and Type	14 digit, non-negative integer	8 digit, non-negative integer
	Business Objective	Single Product Identification Tracking, tracing Recall Record keeping	Category (Product Group) Identification Finding groups of products, Route items, Comparison, benchmarking Enable trade processes, GDSN
	Purpose	Unambiguously identifies an individual product.	Unambiguously identifies the category incorporating products that share the same set of characteristics
	Codes	One-to-one relationship between GTIN and the product. Codes have no other meaning. GTIN is linked to the GPC Brick Code i.e. Each GTIN is always assigned to One Brick code	Linked to the other hierarchy elements of which the Brick is a member together with Segment, Family and Class.
	Property	Uniqueness	Uniqueness
DESCRIPTION ATTRIBUTE	**Purpose**	Use the trade item attributes to describe products for trading partners.	Use brick codes and the associated Brick Attribute and Brick Attribute Values to characterize products for trading partners
	Property	Trade Item Attributes (Typically 30-50 Attributes per GTIN) Not classification attributes Global or Global / local or Local Neutral or category specific Across industries Can be free text Can be legislation specific Can be external code Mandatory / optional / dependent Not necessarily glossary	GPC Brick Attributes (Typically 1 -7 Brick Attributes per Brick) No overlap with trade item attributes Global always (not Target Market specific) Category specific only Relevant to a specific industry; unique, objective, and mutually exclusive Non-legislation specific 8 digit non-negative integer code Proactive glossary definitions

4.1.4. GPC Structure

GPC General Principles:

- Modularity and flexibility of the classification.

- Logical grouping of bricks. The logic behind the schema is transparent

- Universally applicable and not culturally biased.

- Initially published in Oxford English.

- Facilitate the collection of relevant classification information acceptable by the industry.

Schema Principles:

- The GPC schema provides an optional 4 - tier hierarchy – Segment, Family, Class and Brick.

- Each level of the schema is determined by rules and/or principles, and also industry decision. However the rules applied differ depending on the level – Segment, Family, Class, Brick, Brick Attributes and Brick Attribute Values.

- The business rules apply to any level or entity of the schema

- Each Brick can be assigned 1 or more Brick Attributes; in turn each Brick Attribute has a set of associated Brick Attribute Values.

GPC Coding:

- All numbers are 8 digit, non-negative integers

- Unique codes for identifying each product at a brick level

- Constant (deleted bricks are not reassigned)

- Segment, Family, Class

- Brick codes always start with '1'

- Brick Attribute codes always start with '2'

- Brick Attribute Value codes always start with '3'

Temporary GPC Brick Code: '99999999'

This brick code is used for products that cannot be classified within the GS1 Global Product Classification schema. It serves as a temporary holding place for products, which cannot be classified within the current segments of the schema due to its current evolution. It excludes all products that can be classified within the published GS1 Global Product Classification Schema.

Note: Users are encouraged to cease using the temporary Brick code as soon as the necessary classification becomes available.

4.1.5. Brick Attribute vs. Trade Item Attribute

What is an attribute?

In the Product Description world, Attribute is a term reflecting the data elements of a data model. An attribute is a specification feature or characteristic that describes recognisably the physical, compositional, or structural properties of a particular product (single product attribute) or a product group (Brick Attribute).

Classification (Brick) Attribute

For each Brick the associated Brick Attributes and Brick Attribute Values describe the Brick to provide granularity.

What are the components of the Brick Attributes?

- Brick Attribute – a question with regards to the Brick.

- Brick Attribute Value – a pick list

For example:

If Organic (Is the product group claiming to be organic or not?).

- **'Yes'** (the product group is claiming to be organic),

- **'No'** (the product group is not claiming to be organic) or

- **'Unidentified'** (It cannot be determined as to whether the product group is claiming to be organic or not.)

Trade Item Data Model

Use the specified attributes relating to a single product as a communication template for trading partners. The goal is to build data sets for all kind of products.

The single product attribute is a characteristic of the product that is used to describe the commercial offer to the retailer. Trade Item Data Model establishes a framework that is applicable to any parties within supply chain i.e. supplier, retailers, exchange, etc across the globe, to communicate the necessary data elements relating to an item, thus supporting the core business requirements in the global trading environment. The Trade Item data model has 'placeholders / fields' for communicating the relevant classification schema (properties) that relates to the product concerned. However the schema is a separate entity to that of the item model, the relationship is that the product's Brick and subsequent Brick attributes are communicated in this framework.

How to differentiate GPC Brick Attributes and Trade Item attributes?

In order to differentiate between the current and future attributes of the Trade Item Model and GPC Classification, there is a need to establish, as to what can be deduced at present. Rules are needed to determine whether an attribute belongs within the GPC Classification as an attribute of the Trade Item Model.

4.1.6. Brick Attribute Rules

- Brick Attributes must be globally applicable and not biased towards a region, culture or country.

- Brick Attributes must be recognised, understandable and relevant to the industry, in terms of product classification.

- Brick Attributes must be unique (intention, format, technicalities), objective and mutually exclusive – includes both Brick Attribute and their Brick Attribute Value choices.

- Brick Attributes must be based on objective logic, and must not be subjective or emotive – An example of a non-classification attribute would be a marketing view e.g. Indulgence.

- Brick Attributes must not relate to global, regional or local legislation requirements. It is a piece of information required globally, but will be governed / legislated locally. E.g.: If Organic, Food Quality / Food Assurance Claims etc.

- Brick Attributes must be standardised in terms of naming.

- High-level attribute. The best method for collection is not necessarily how the User would publish. I.e.: the ideal method of collection may require more granularity

- Single, comprehensive and exhaustive code list.

- No ambiguity in any terms / words used

- All Brick Attributes and Brick Attribute values will be defined to show what information they are seeking to identify

- No Brick Variant will be used

- The number of Brick Attributes assigned to a given brick may range commonly from 0 to a maximum of 25 with an average of 3 to 4 attributes

- 2 classification systems can be linked

- Brick Attributes should refer to high-level classification (Brick) attributes of product groups rather than describing the individual product concerned – an example of a non-classification attribute would be Brand, as it relates specifically to an individual or small group of products.

4.1.7. Brick Attribute Values

- Normalised value pick list. Only one Brick Attribute Value could be populated per each Brick.

- Brick Attributes must contain a default value in cases of limited information or non-applicability – unclassified and unidentified.

- Brick Attributes must possess a single comprehensive and exhaustive code list.

- Brick Attribute Values must be managed and maintained by the Service Provider and where necessary the GPC Task Group (GPCTG)

- Brick Attribute Values should be mutually exclusive and values must be uniquely defined

- There should be no abbreviations within Brick Attribute Values.

- Brick Attribute Values should be in alphabetical order and created on the basis of key words.

- Contentious terms or words used as a value or within a value must be added to the glossary, along with a concise definition.

4.1.8. Trade Item Model Attribute

- Single product attributes can be globally, regionally or locally applicable and in some cases will be biased towards a region, culture or country.

- Single product attributes can be applicable to all industries (core) or applicable to one or more industries (extension).

- Single product attributes may be recognisable and understandable to selected users. Though it must be relevant to the industry, in terms of data synchronisation and apparent legacy harmonisation/normalisation. To support the core business requirements in the global trading environment.

- Single product attributes can be subjective and emotive. For example Brand in some cases is a subjective attribute.

- Single product attributes can be in a free text format; each individual user determines value population for the field, a code list is not used in these cases.

- Single product attributes typically relate to legislative requirements of a specific region or country, which may or may not be relevant to a given user.

- Single product attributes may refer to more than one code list i.e. colour description or Dangerous Goods.

- Single product attributes are intended to describe an individual product rather than a generic grouping or range of products, as is done by classification.

4.1.9. Trade Item Attribute Values

- Various types from free text to codes and dates

- Single product attribute values may not be mutually exclusive

- Single product attributes do not have default values if an answer cannot be given to a specific single product attribute, whereas within classification there is the option of unclassified and unidentified as Brick Attribute Values

- Single product attribute value may be in certain cases managed and maintained by another standards organisation e.g. ISO.

4.1.10. Work Request (WR) Assessment

When a GS1 Work Request (Section 5.3) involving an attribute is received, it is evaluated as to whether the attribute is a part of the Trade Item or part of the GPC Brick. A specific set of rules determines this split. A series of questions is applied to each GPC WR with the following results:

- If '**Yes**' is answered to **ALL** of the questions – the request is processed as a GPC Attribute which is contained in the GPC Schema and Online Browser. These WRs are routed to the GPC SMG.

- If '**No'** is answered to any **ONE** of the questions – the request is processed as a Trade Item Attribute which is contained in the GS1 Global Data Dictionary (GDD). These WRs are sent to Central Operations where they are routed to the appropriate SMG.

Figure 4-2 Attribute Assessment
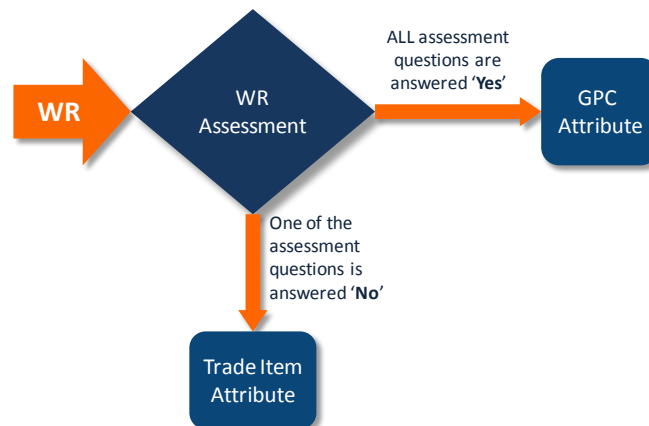
Attribute Assessment Questions:

1. **Globally applicable?** Attributes that are regional or local need to be supported by the Item Model.

2. **Relevant to users and industry?** Attributes must be recognized, understandable and relevant to the industry, in terms of product classification.

3. **Unique, objective and mutually exclusive?** The attributes must be unique in terms of intention and result, whereas and there is room for overlap and misinterpretation. Attributes also must be based on objective logic rather than based of subjectivity or emotion.

4. **Non-legislation specific?** The attributes within classification must not bear any relationship to that of legal requirements; if they do must be placed within the Item Model.

5. **High-level attributes?** The attributes intention and result within classification should be based on high level attributes and groupings that are a key criterion that a user would search, view and publish products.

Can it be part of a single, comprehensive and exhaustive code list? The attributes within classification must have a single, comprehensive and mutually exclusive code list / pick list of values that provide an answer to the question being asked. Duplicate values within the same attribute are prohibited; the same applies to abbreviated values. Each code list must contain either unclassified (value known but not defined in code list) or unidentified (value unknown) and, if applicable, both. The code list is to be managed and maintained by one source, the service provider.

Examples:

GPC Attribute or Trade Item Attribute	Global?	Category Specific?	Granularity Relevant to the Industry?	Unique, Objective, Mutually Exclusive?	Non-legislation Specific?	Coded?	Code Value Pick List?
Brand Name	N	N	Y	N	Y	N	N
Trade Item Description	N	N	Y	N	Y	N	N
Height	Y	Y	Y	Y	Y	N	N
GTIN	Y	N	Y	Y	Y	Y	Y
GLN	Y	N	Y	Y	Y	Y	Y
Colour Description	N	N	N	Y	Y	Y	Y
Colour of Wine	Y	Y	Y	Y	Y	Y	Y
Country of Origin	Y	N	N	Y	Y	Y	Y
Origin of Wine	Y	Y	Y	Y	Y	Y	Y
Catalogue Price	N	N	Y	Y	Y	N	N
Organic Trade Item Code	N	Y	Y	N	N	Y	Y
If Organic?	Y	Y	Y	Y	Y	Y	Y

It can be seen from these examples that Trade Item attributes are:

■ Brand Name and Trade Item Description

  □ Not necessarily Global

  □ Not necessarily Category Specific

  □ Not unique (in terms of intention, format and technicalities)

  □ Not coded

- □ No code value pick list
- □ No glossary exist
- ■ Height
  - □ Not coded
  - □ No coded value pick list
  - □ No glossary
- ■ GTIN and GLN
  - □ Not category specific
  - □ No glossary
- ■ Colour Description
  - □ Not necessarily Global
  - □ Not necessarily Category Specific
  - □ Not necessarily unique (in terms of intention, format and technicalities)
- ■ Catalogue Price
  - □ Not necessarily Global
  - □ Not necessarily Category Specific
  - □ Not coded
  - □ No code value pick list
  - □ No glossary
- ■ Organic Trade Item Code
  - □ Not necessarily Global
  - □ Not unique (in terms of intention, format and technicalities)
  - □ It can be legislation specific
  - □ No glossary

It can be seen from these examples that GPC Brick Attributes are:

- ■ Colour of Wine, Origin of Wine and If Organic because they are all:
  - □ Global
  - □ Category Specific
  - □ Granularity Relevant to the Industry
  - □ Unique (in terms of intention, format and technicalities), objective and mutually exclusive
  - □ Non-legislation specific
  - □ Coded with 8-digit non-negative integer codes
  - □ They all have 8-digit non-negative integer coded value pick list
  - □ Contentious terms of words used based upon a glossary

4.2. Rules for GPC Database

4.2.1. Schema Structure

The GPC schema is structured in a hierarchical format where the higher levels have control or precedence over the lower levels. Hierarchical structures are a one-to-many relationships; each level having one or more levels below it except the lowest level. Conversely, lower levels are aggregated into the level above.

The GPC schema has 4 levels in its hierarchy (Segment, Family, Class and Brick) providing a coherent, logical and intuitive grouping that can be used to classify comparable products in a global environment. Each level is governed by business rules and/or principles and is intended to aid search functionality by using standard naming conventions, non-culturally biased terms and spellings and ensuring unique placement of products within the schema. Each node within the schema is designated with a Code and Description pair. The Code provides a unique reference while the Description aids human readability. Either the Code or Description can be used for searching, filtering or referencing.

The lowest level in the hierarchy, Brick, has a level beneath it called Brick Attribute to which Brick Attribute Values are allocated. Brick Attributes or Values are not included in the hierarchy, as they cannot be aggregated to higher levels. Brick Attributes are only relevant to the Brick they are assigned to. Brick Attribute Values are only relevant to the Brick Attribute they are assigned to.

Figure 4-3 Brick Attribute Example

S(1)															S(n)
F(1)								F(n)							
C(1)				C(n)				C(1)				C(n)			
B(1)		B(n)		B(1)		B(n)		B(1)		B(n)		B(1)		B(n)	
BA(1)	BA(n)	BA(1)	BA(n)	BA(1)	BA(n)	BA(1)	BA(n)	BA(1)	BA(n)	BA(1)	BA(n)	BA(1)	BA(n)	BA(1)	BA(n)
BAV(1..n)	BAV(1..n)	BAV(1..n)	BAV(1..n)	BAV(1..n)	BAV(1..n)	BAV(1..n)	BAV(1..n)	BAV(1..n)	BAV(1..n)	BAV(1..n)	BAV(1..n)	BAV(1..n)	BAV(1..n)	BAV(1..n)	BAV(1..n)

S = Segment, F = Family, C = Class, B = Brick, BA = Brick Attribute, BAV = Brick Attribute Value

4.2.2. Hierarchies

In order to understand the definitions for each level it is necessary to begin with Brick Attributes and then understand how these relate to the lowest level of the hierarchical structure, the Brick.

- **Brick Attribute and Brick Attribute Values** – Classification is a structured method of assigning category (product group) information detail to items contained within a Brick. Each Brick Attribute is designed to represent a particular category feature of the products assigned to the same Brick. Brick Attribute may be assigned to more than one Brick. Each Brick Attribute will have a set of unique, objective and mutually exclusive Brick Attribute Values associated with it.

- **Brick** – The fourth, lowest and most detailed level of the hierarchy is a logical grouping of similar products that conform to the Brick business rules. A Brick code is a classification key and will contain a group of products that; serve a common purpose; are processed to similar methods; are used and applied in a similar manner; are of a similar form and material and, as far as practical, contain products that can be characterised by the same set of Brick Attributes relevant to the product. Very specific groupings of products can thus be identified by the combination of a Brick and a collection of Brick Attributes with specific Brick Attribute Values.

- **Class** – The third level of the hierarchy is a logical grouping of Bricks sharing similar characteristics. The Bricks contained in a Class are a logical and coherent aggregation.

- **Family** – The second level of the hierarchy is a logical grouping of Classes sharing similar characteristics. The Classes contained in a Family are a logical and coherent aggregation.

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■ **Segment** – The first and highest level of the hierarchy is a logical grouping of Families sharing similar characteristics The Families contained in a Segment are a logical and coherent aggregation.

Very specific groupings of products can thus be identified by the combination of a Brick and a collection of Brick Attributes with specific Brick Attribute Values. For example, the grouping of products in Figure 4-4 is quite different to the grouping of products in Figure 4-5 yet they can both be aggregated into the same Class, Family and Segment.

Figure 4-4 Product Grouping (Example 1)

Segment	Food Beverage and Tobacco Product						
Family	Beverages						
Class	Coffee, Tea and Substitutes						
Brick	Coffee and Coffee Substitutes - Instant						
Brick Attribute	Botanical Variety	Formation	If Decaffeinated	If Organic	Origin of Coffee	Roast of Coffee	Type of Creamer/Whitener
Brick Attribute Values	CHICORY	GRANULES	NO	NO	COLUMBIA - HUILA	DARK	NONE

Figure 4-5 Product Grouping (Example 2)

Segment	Food Beverage and Tobacco Product						
Family	Beverages						
Class	Coffee, Tea and Substitutes						
Brick	Coffee and Coffee Substitutes - Instant						
Brick Attribute	Botanical Variety	Formation	If Decaffeinated	If Organic	Origin of Coffee	Roast of Coffee	Type of Creamer/Whitener
Brick Attribute Values	ARABICA	GRANULES	YES	NO	KENY - MOUNT KENYA	UNROASTED	NONE

In another example, Beer may be considered as a Beverage and therefore will be found in the Family Beverages but it is quite different to Coffee. Therefore, all types of Beer will be grouped in a Brick called Beer, which will be aggregated with other Alcoholic Beverages such as Cider and Perry into a Class called Alcoholic Beverages.

4.2.3. Brick Attribute and Brick Attribute Value Assumptions

Every Brick Attribute has an associated Brick Attribute Value list. Brick Attribute and Brick Attribute Values should be considered as a bonded pair. For every Brick Attribute a Brick Attribute Value is required to complete the pairing. Therefore, Brick Attribute Value lists must accommodate a wide coverage of possibilities. However, in some cases it may not be possible to complete a confirmed or exact Attribute /Value pairing. For this reason, two special Brick Attribute Values are commonly assigned to every Brick Attribute to ensure an appropriate Attribute /Value pairing can be completed.

■ **Brick Attribute Value UNCLASSIFIED** – This term indicates that it is possible to code a more specific Value for the Brick Attribute but at the time of classification an appropriate value from the values list could not be selected. If a user cannot identify a value to make the Attribute/Value pairing specific and correct to the product being classified, the user may code this value instead of coding a potentially incorrect value. The use of this Brick Attribute Value also suggests it may change in the future once the information required to select a more specific value becomes available. Initial attempts at coding Brick Attribute's may use this Brick Attribute Value until greater certainty about specific values is obtained. It should generally be used as a last resort.

Short definition

This term is used to describe those products which cannot be assigned a specific Brick Attribute Value for a specific Brick Attribute, as the appropriate value is not present in the code list.

■ **Brick Attribute Value UNIDENTIFIED** – This term is used to describe those products which cannot be assigned an attribute value for a specific attribute type, as the information required to do this is not present or obtainable, or cannot be determined given the existing product information.

Short definition

This term is used to describe those products that cannot be further classified at a more granular level that is required to identify a specific Attribute Value for an Attribute Type.

Example

Figure 4-6 identifies a Brick used to classify Instant Coffee. Generally, it <u>is possible</u> to identify a specific Brick Attribute Value for the Brick Attribute "Formation." However, in this example the user selected **UNIDENTIFIED** until information comes to hand that enables the user to make a correct and specific selection. This suggests that at a future time the user will reclassify the item with a more specific value from the existing code list, perhaps GRANULES. The user has selected **UNCLASSIFIED** for the Brick Attributes "Type of Creamer/Whitener" as it is not relevant for the item being classified as no creamer or whitener is present.

Figure 4-6 Brick used to classify Instant Coffee

Segment	Food Beverage and Tobacco Product						
Family	Beverages						
Class	Coffee, Tea and Substitutes						
Brick	Coffee and Coffee Substitutes - Instant						
Brick Attribute	Botanical Variety	Formation	If Decaffeinated	If Organic	Origin of Coffee	Roast of Coffee	Type of Creamer/Whitener
Brick Attribute Values	ARABICA	UNIDENTIFIED	YES	NO	KENY - MOUNT KENYA	UNROASTED	UNCLASSIFIED

4.3.   Rules for GPC Titles

Rule	Description
Structure/Word order:	■ The title should be constructed with "blocks" of words in their plural form to help define a group of products e.g. Bread or Treatments ■ The title should be constructed using nouns, verbs and adjectives ■ Priority words should be nouns naming the product type (1 "block" of priority words is recommended) ■ Qualifier words should be verbs and adjectives providing further descriptive breakdown of the product type, such as: Usage, Application, Form, Method of Storage, or Powered / Non Powered. There should be a maximum of three blocks of qualifier words ■ Abbreviations should be avoided ■ All words should be defined in UK English ■ Each priority or qualifier word should start with a capital letter ■ Priority or qualifier words should be in alphabetical listing where relevant ■ Each word should be descriptive as possible to aid search and browse

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Rule	Description
Separating blocks of words:	Use the hyphen "–" or ASCII character code 150 to split priority words from qualifier words e.g. block1 – block2 ■ There should be a space before and after the hyphen to differentiate between normal hyphenated words ■ The short hyphen/dash (as used in normally hyphenated words) should not be used "-" or ASCII character code 45 ■ The long hyphen should not be used "—" or ASCII character code 151 If there are 3 qualifiers use another hyphen to split the first qualifier from the second qualifier e.g. block1 – block2 – block3 (block4) If there are 2 qualifiers use the curved bracket/parentheses "("and")" or ASCII character code 40 and 41 to split the first qualifier from the second qualifier e.g. block1 – block2 (block3) ■ There should be a space before the opening bracket ■ There should always be an opening bracket and a closing bracket ■ There should be no spaces between the brackets and words contained ■ The angle brackets "<", ">"or ASCII character codes 60 and 62 should not be used ■ The square brackets "[", "]", or ASCII character codes 91 and 93 should not be used ■ The braces brackets "{", "}" or ASCII character codes 123 and 125 should not be used **Exceptions:** ■ Frozen, Perishable and Shelf Stable qualifier should always appear in brackets e.g. Sandwiches/Filled Rolls/Wraps (Frozen) ■ Powered or Non Powered qualifier should always appear in brackets e.g. Air Fresheners (Non Powered) ■ Disposable or Non Disposable qualifier should always appear in brackets e.g. Baby Diapers (Disposable) ■ Segment qualifiers should always appear in brackets e.g. Seat Cushions (Automotive)
The forward oblique "/" should be used to connect/link words	■ The purpose of the oblique is to indicate an "and" and an "and/or" link ■ There should be no spaces on either side of the oblique ■ The backward oblique "\" should not be used ■ The ampersand "&" should not be used ■ The comma "," should not be used
Abbreviations should be avoided – however when required:	■ Abbreviations should not use the period (.) or ASCII character code 46 to separate or end abbreviations ■ All letters contained in the abbreviation should be Upper case ■ There should be no spaces in the abbreviation e.g. LED
Normal Hyphen usage	■ The short hyphen/dash "-" or ASCII character code 45 should be used ■ There should be no space on either side of the hyphen ■ Words before the hyphen should start with an upper case letter ■ Words after the hyphen should start with a lower case letter e.g. In-car
Prefixes	■ Words prefixed with "Anti", "Pre" or "Post" should use a hyphen. The word following the hyphen should begin with a lower case letter e.g. Pre-recorded ■ Words prefixed with "Non" should not use a hyphen. The words should be separated by a space and each word should begin with a capital letter e.g. Non Bound

Rule	Description
Symbols	Only the symbols defined in the above rules are permitted for use. All other symbols are not permitted e.g. "!", "?", "£", "$", "%", "*" etc. The following ASCII character codes are not permitted: ■ 33 through 39 ■ 42 through 46 ■ 58 through 64 ■ 91 through 96 ■ 123 through 149 ■ 151 through 255
Other titles	■ The Brick title should be a construct of the Brick priority word(s) with the word "Other" appended ■ The appendix should have no separator e.g. First Aid Other **Note:** These Bricks may be removed at a later date
Variety Pack titles	■ The Brick title should be a construct of the Class title with the words "Variety Packs" appended ■ The appendix should have no separator. As "Variety Packs" can occur in higher levels of the hierarchy (e.g. Class, Family, Segment) it is desirable to not have any symbols present in the titles at these levels. ■ When the Class title already has the words "Variety Packs" appended then the Brick title will be the same as the Class title e.g. Door Hardware Variety Packs
Accessories / Replacement Parts	■ The Brick title should be a construct of the Class title with the words "Accessories/Replacement Parts appended ■ The appendix should use the hyphen separator e.g. Oral Hygiene – Replacement Parts

Variety Pack Syntax

1. When the Class title does not have "Variety Pack" appended
   Brick title = [Class title] "Variety Packs"

2. When the Class title does have "Variety Pack" appended
   Brick title = [Class title]

3. Accessories/Replacement Parts titles – Brick title = [Class title] "Accessories/Replacement Parts"

4. All remaining titles refer to the Valid Formats table

Summary of Valid Title Formats

There are 4 valid formats (excluding the Rule exceptions):

1. Priority Words

2. Priority Words – Qualifier words

3. Priority Words – Qualifier words (Qualifier words)

4. Priority Words – Qualifier words – Qualifier words (Qualifier words)

4.4.   Rules for GPC Codes

This section defines the rules governing GPC codes.

Level	Length	Syntax	Example
Segment codes	8	Two digit code followed by six zeros	10000000
Family codes	8	preceded with the Segment code	10200000
Class codes	8	preceded with the Segment and Family code	10203000
Brick codes	8	preceded with a "1"	10000123
Attribute Type codes	8	preceded with a "2"	20000123
Attribute Value codes	8	preceded with a "3"	30000123

Step	Action/Description/Rule
Allocation	Codes are allocated sequentially at each level. The database selects the next available code for the level being created. Once the parent hierarchy has been determined the database then builds the complete code. For example, a new Class is created [40] and it is associated with a Family [20] and a Segment [10]. Therefore, the complete code for the new Class can be expressed as 10204000.
Level Modifications	Codes are impacted by level Modifications, Additions and Deletions. Modifications fall into two categories of severity; Major and Minor. Depending on the form of change an appropriate rule will be applied (see below).
Level Addition	e.g. a new Brick is added. The user must identify the parent hierarchy. With this information the database automatically selects the next consecutive number not previously allocated from the range at the appropriate level and either builds the complete code and/or formats the code as per the Format rules above.
Level Deletion	e.g. a Brick is deleted. The user indicates a code is to be deleted. In the database the code is flagged as "unavailable" for future publications. In this way the code will never be lost and as such it cannot be reallocated.
Impact by Change Minor Modification	e.g. a Brick description is amended to correct a spelling mistake. There will be no change to the code.
Impact by Change Major modification	e.g. a Brick is redefined warranting the Brick to be split. If a level is split there are two options that could apply. The option selected is dependent on the severity and impact of change. A less severe example would be a Brick split into two Bricks that simply splits the products contained. In this example the rule applied would be, the existing level remains (and may be renamed) and new levels are added as required. The products requiring reclassification would be moved to their new levels whilst leaving some of the original products in the source level. A more severe example would be new Bricks being built up from existing Bricks or parts of Bricks and would require the reclassification of all of the products contained in the source Bricks. In this example the rule applied would be, new levels are added as required, all products in the source level are reclassified and moved leaving the source level empty, then the source level is deleted. Added and deleted levels would follow the Addition and Deletion rules as stated above.
Reuse	Brick Codes are not reused. Once a code is allocated it becomes unavailable for reissue. Deleted codes are not deleted from the database, but flagged as "deactivated."

4.5.   Rules for Managing Redundant GPC Attributes

A brick must, as far as is practical, contain products that can be characterised by the same set of attribute types relevant to the product. These attributes must meet the GPC attribute rules, and be part of the global standards. Where it is deemed not practical the split will be considered based on industry input.

- During the development of a schema, a collection of attributes will be identified for each brick. These attributes will conform to the attribute rules.

- During the development of a schema, the industry providing the feedback in the context of attribute redundancy may want to consider the following;
  - Industry need – must be useable and required
  - Rules compliance
  - Size and scope – consider impact such as mapping, subscriptions, etc.

A balance needs to be struck in context of the above. Ultimately, industry need takes precedence and may accept an agreeable level of attribute redundancy.

When making this decision the industry may want to consider the type of attributes that could be used in order to prevent a change to the schema:

- **Boolean** attributes can provide absolute clarity without adversely impacting the brick definition. For example: 'Yes/No' or in other words 'it is' or 'it isn't.' There is no 'in between' and there is no ambiguity.

- **Non-Boolean** attributes may not provide absolute clarity and therefore may be more applicable in a more granular brick.

This industry should consider the impact of defining bricks at a more granular level in an attempt to eliminate attribute redundancy. The industry should remember the GPC Principle that "the number of bricks should be manageable."

For Example:

A singular brick titled 'Clothing' has an attribute titled 'If Maternity". Obviously this attribute is not applicable to Men's clothing. There are two options for resolution:

- **Option 1:** Accept the status quo recognising that for every piece of clothing the attribute 'If Maternity' must have a value of 'Yes' or 'No.'

  In this option every piece of non-women's clothing would be coded with the value 'No.' There is no doubt or confusion when assigning the value as it is either 'Yes' or 'No.'

  The schema remains smaller in scope and can be easily understood and applied in the industry.

- **Option 2:** Split the singular brick 'Clothing' into the various alternatives to ensure attribute clarity. Possibilities are;
  - 'Clothing Women's'
  - 'Clothing Men's'
  - 'Clothing Unisex'
  - Others?

  In this option the collections of attributes would have to be re-assessed for each new brick and in this instance 'If Maternity' would only be applied to 'Clothing Women's.' The likelihood is that most of the attributes will essentially be the same across the bricks.

  The schema has increased in scope and complexity as now only certain attribute are applicable to certain bricks, but absolute clarity may be achieved.

4.6.   Rules for Managing Contested GPC Hierarchies

The parentage of a Brick can become contested when more than one parent hierarchy is possible. This may become apparent during development of a sector or through evolution of the products contained within the Brick. Anyone can alert the GPC Standards Management Group (SMG) to a contested hierarchy.

The GPC SMG investigates how the contested Brick should be weighted in terms of primary application (e.g.: place the Brick Shoeshine in the Footwear hierarchy instead of the Homecare hierarchy).

All contesting the Brick hierarchy must agree with the primary application.

Segment	Homecare	Automotive
Family	…	…
Class	…	…
Brick	Widgets	Widgets
Usage	20%	80%

In this example it has been agreed Widgets are predominantly used and searched for in the Automotive hierarchy. Therefore the Automotive hierarchy assumes ownership of the Brick Widgets.

If the primary application becomes not practical or consensual agreement cannot be reached, it may be possible to separate it into a Cross hierarchy e.g. Cross Segment, Cross Family, Cross Class, 'Widgets' as a Brick to be used across categories.

In this instance, the GPC SMG needs to provide their decision and sign off.

Segment	Homecare	Automotive	Cross Segment
Family	…	…	…
Class	…	…	…
Brick	Widgets removed	Widgets removed	Widgets
Usage			100%

In this example it has been suggested Widgets are removed from both Homecare and Automotive hierarchies and placed in a Cross Segment hierarchy.

The Service Provider prepares supporting documents with assistance from the Sub Group members including the discussion around primary application and a recommendation.

The GPC Group Manager tables this item on the next GPC SMG agenda and presents it.

The GPC SMG assesses the documentation and recommendation and provides sign off advocating one of the two possible solutions;

1.   Designate a primary application and associated hierarchy or

2.   Provide consent to include the disputed Brick into a new or existing Cross Segment hierarchy.

The decision of the GPCTG is documented and distributed between the Sub Groups by the Service Provider. Impacted GPC Sub Teams implement the decision of GPCTG accordingly.

4.7. Rules for GPC Prepared/Processed Classification

The rationale for determining if products are prepared or processed depends on whether they have undergone a significant change in terms of physical state prior to sale through a manufacturing process that may include cooking, drying, reforming (ground), curing, and combination with additional ingredients.

4.7.1. Prepared and Processed Products

Any product that has been:

- **Cooked** – process of preparation through heating

- **Dried** – process of removal of moisture required for bacterial growth, usually via evaporation

- **Reformed** – process whereby the product has been made into another shape e.g. a burger constructed of ground beef.

- **Smoked** – process of exposure for long periods of time to the smoke from a (usually wood) fire. Includes hot and cold smoking.

- **Salted/Curing** – process of curing through reduction of water using salt, sugar or a combination of both, or soaking in a curing solution consisting of water, salt and/or nitrate and/or sugar.

- **Added Ingredients** – Products that have the additional ingredients other than a sauce or seasonings, i.e. vegetables, rice, pasta, etc. These would be classified within the 'Grain Based Products', 'Dough Based Products' & 'Vegetable Based Products'.

  Note: Although most products that are raw will be unprocessed, raw products that are ground and reformed (i.e., ground or minced beef) are classified as processed and prepared. Also note that products which have not been subject to any manufacturing process other than being boned, sliced, or diced are classified as Unprepared/Unprocessed

Examples, by family, of typical prepared/processed products are:

- **Fruit** –stewed apples, dried apricots, etc.

- **Vegetables** –roasted vegetables, dried onion, canned plum tomatoes (have been cooked), etc

- **Meat, Poultry & Game** –roasted chicken breast, cooked beef in a red wine sauce,

- **Fish** –tuna steak in brine (as it has been cooked), dried cod, fish fingers (must be reformed), sushi (as it has been smoked) etc.

- **Shellfish** –cooked shrimps, boiled lobster, crab in brine, etc.

- **Nuts & Seeds** –roasted hazelnuts, salted peanuts, dried walnuts etc.

- **Aquatic Invertebrates** –sautéed squid, fried octopus, etc.

- **Aquatic Plants** –dried seaweed, cooked carrageen moss,

4.7.2. Unprepared & Unprocessed

The rationale for determining if products are unprepared and unprocessed depends on whether they are sold in their natural state or have undergone only rudimentary change; e.g. cleaned, trimmed, chopped, peeled or immersed in its own natural juice or water. These products can have the addition of flavouring, which does not alter its natural state, e.g. herbs, spices, seasoning, etc., though the

addition of these must not be responsible for any physical change to the product. This includes products that are:

■ Uncooked

■ Not Dried

■ Not Reformed

■ Not Smoked

■ Not Salted/Sugared/Cured

Note: The addition of seasonings, coatings, sauces, and fillings is permitted for any product that is otherwise an unprepared and unprocessed product

Examples of unprepared and unprocessed products with additional ingredients are:

■ Raw Chicken in a red wine sauce (excluding vegetables, rice, pasta, etc).

■ Sliced raw fish seasoned with salt/pepper.

■ Raw pork coated in breadcrumbs, batter, etc,

■ Products immersed in brine or vinegar – brine is seen as a preservation agent not as preparation and that the product is in its natural state or just gone through rudimentary changes i.e. chopped, sliced, peeled, etc.

Product factors which are excluded from unprepared/unprocessed:

■ Products that are cooked, dried, smoked, salted, cured, sugared, reformed, etc.

■ Products that have the additional ingredients other than a sauce or seasonings, i.e. vegetables, rice, pasta, etc. These would be classified within the 'Grain Based Products, Dough Based Products, Dairy Based, Egg Based, Dairy/Egg Based Products & Vegetable Based Products' bricks.

Examples, by family, of typical unprepared/unprocessed products are:

■ **Fruit** –chopped pineapple, fresh strawberries, blackcurrants in a fruit coulis, etc.

■ **Vegetables** –raw peeled carrot batons/sticks, sliced potatoes with a sauce, mange tout in its natural state, etc.

■ **Meat, Poultry & Game** –sliced raw turkey, raw beef with bone removed, raw chicken breast in a sauce, raw peppered steak, etc.

■ **Fish** –raw salmon steaks, cod in batter (excludes reformed cod), etc

■ **Shellfish** –prawns in their natural state, etc.

■ **Nuts & Seeds** –natural brazil nuts, etc.

■ **Aquatic Invertebrates** –raw octopus in sauce, diced raw squid, etc

■ **Aquatic Plants** –raw dulse, sliced raw nori, etc.

5. GPC Development & Maintenance

GPC standards are developed by the community through the GPC SMG (Standards Maintenance Group). Consistent with the Global Standards Management Process (GSMP), GPC Work Requests are submitted by the community to initiate a change management process.

5.1. Roles and Responsibilities

Role	Responsibility
GSMP Service Provider	Responsible for the assessment of GPC Work requests and development of the GPC schema
GSMP Publisher (GS1 France)	Responsible for publishing each GPC release.
GSMP Process Manager	Facilitates GPC SMG meetings and is overall project manager for all GPC work order (WO) development and deployment
Industry Engagement (IE)	Responsible for engaging with specific industries (via Industry User Groups) in order to understand their needs for standards, services & solutions for the improvement of industry processes.
GPC SMG	Standards Maintenance Group which is comprised of GPC industry experts. Responsible for GPC governance and decision making.
Process Oversight Committee (POC)	Advisory body whose primary role is to ensure that the GSMP process is being followed
GO Webmaster	Responsible for maintenance of the GPC section of the Knowledge Centre

5.2. Work Request Assessment

When a Work Request (WR) is received, it is evaluated as to whether the attribute is a part of the Trade Item (delivered via Global Data Dictionary), or part of the GPC Brick (as an "Attribute"). A specific set of rules determines this split. A series of questions is applied to each GPC WR.

Refer to Section 4.1 for detailed information on the rules for accessing GPC Attributes and Section 4.1.10 for the specific assessment questions.

5.3. Work Request (WR) Paths

A Work Request can refer to one of the following:

- **Maintenance Changes** - a value is added to the schema or the schema evolves to accommodate user needs but has no impact on its structure (ontology).
  - □ Minor Change (Rules Compliant, e.g., adding a new attribute value)
  - □ Major Change (Rules or Non-Rules Compliant; e.g., splitting an existing brick into two bricks)
- **Development Changes** - a fundamental change to the schema or the schema evolves to accommodate user needs with major impact on its structure (ontology).
  - □ Modifications to the Segment, Family, or Class structure

Upon receiving a Work Request, the GPC SMG designates it as either "Maintenance" or "Development". The "Work Request" then turns into a "Work Order" and development begins.

Figure 5-1 GPC Work Request Path
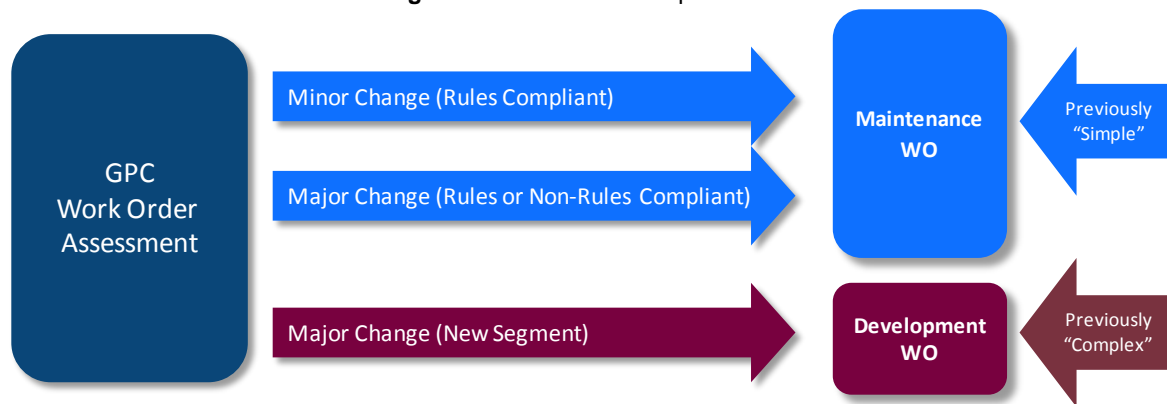
5.4. Types of GPC Changes

Major Change: Non-Rules Compliant

A non-rules compliant major change typically involves complex and comprehensive modifications within the schema that does not conform to the current rules and/or principles due to the level of severity the change requires. These changes can involve any part of the Hierarchy Structure, and proposed changes that do not conform to the existing GPC rules (e.g., proposals to deviate from established GPC principles to better meet industry requirements).

Major Change: Rules Compliant

A Rules Compliant major change refers to all changes that fit the existing rules and principles of the Schema. Therefore the change is legitimate and its implementation can be justified by its compliance to the schema rules. Typically these changes involve modifications to the existing schema above the class level where existing classifications are further subdivided or combined (e.g., splitting an existing family into two families).

Minor Change: Rules Compliant

A Rules Compliant minor change refers to all subdivisions or combinations of classes or bricks that are perceived as a growth change that fits the rules and principles of the schema. Typically a growth change could propose additions and deletions to any entity at or below the class level within the schema i.e. the Class, Brick, Brick Attribute, or Brick Attribute Value or redefinition of any of these existing elements.

5.5. WR Review Criteria

Each WR submitted to the GPC SMG shall be reviewed to determine its level of compliance with the following criteria. Those that satisfy all criteria shall be advanced for publication. Those that do not will be referred back to the submitting party for further clarification and/or WO revision.

1. Are all proposed hierarchy elements global in nature or are they dependent on regional definitions or references?

2. Do all proposed Brick Attribute provide exhaustive, mutually exclusive value lists?

3. Do products likely to be assigned to a brick, as far as practical, share the same brick attributes?

4. Do all Brick Attributes represent a single characteristic, or are more than one characteristics present that can be "decomposed"?

5. Are all Brick Attributes and Brick Attribute values precisely and unambiguously defined?

6. Do code and value names conform to the GPC rules for titles (Section 4)?

7. Is the number of Bricks and Brick Attributes manageable and aligned with industry use?

5.6. Change Management

There are two processes for GPC Standards Development:

■ GPC Maintenance Work Orders – Developed by the GPC SMG

■ GPC Development Work Orders – Developed by a GPC MSWG

Figure 5-2 GPC Development Process
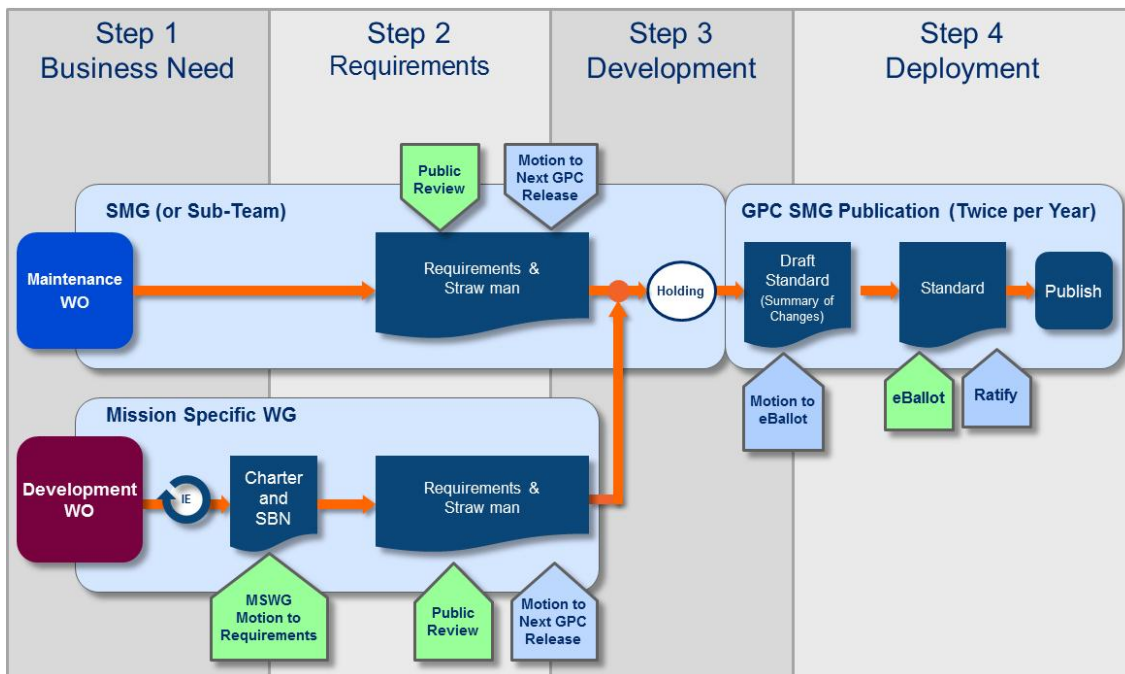
5.6.1. Maintenance Work Orders

GPC Maintenance Work Orders are routed directly to **Step 2: Requirements**.

5.6.1.1. Step 2: Requirements

Responsible: GSMP Service Provider, GPC Process Manager, GPC SMG

Inputs: GPC Maintenance Work Order (WO)

Process:

1. The **GPC Service Provider** creates a GPC 'STRAWMAN PROPOSAL' (a visual representation of the proposed GPC Hierarchy and Brick definitions) which is then reviewed by the GPC SMG.

2. The **GPC Process Manager** places the WO Requirements and WO 'STRAWMAN' through a Community Review (2 to 4 weeks).

3. The **GPC SMG** resolves all community review comments and Motions-to-Progress the WO to **Step 3: Development**.

Outputs: Approved GPC Requirements and 'STRAWMAN PROPOSAL'

5.6.1.2. Step 3: System Development

Responsible: GSMP Service Provider

Inputs: Approved GPC Requirements and 'STRAWMAN PROPOSAL'

Process:

1. The submitter of the request prepares a detailed Work Request (WR) using the templates provided by the GPC SMG.
2. The GPC SMG reviews the WR using the criteria in Section 5.5 and either returns the WR for review and revision by the submitter or approves it for deployment.
3. The **GPC Service Provider** updates the GPC Schema base using the approved CR.
4. The Updated GPC Schema remains in a holding pattern until the deployment process starts.

Outputs: Updated GPC Schema

5.6.1.3. Step 4: Deployment

Responsible: GPC Service Provider and GPC Process Manager

Inputs: Summary of Consolidated Updates to GPC Schema

Process:

1. The **GPC Service Provider** creates a *Summary of Consolidated Updates* to GPC Schema.
2. The **GPC Process Manager** places the *Summary of Consolidated Updates* in eBallot
3. The **GPC Process Manager** (working with GSMP Operations) processes the *Summary of Consolidated Updates* for Ratification.
4. The **GSMP Publisher** (Working with the GO Webmaster) publishes schema in two formats:
   - □ GPC Schema (Excel and XML format)
   - □ GPC Browser (HTML Browser-based format, includes translations)

Outputs: Published GPC Schema

5.6.2. Development Work Orders

Development Changes signify fundamental changes to the schema or the evolution of an existing schema to accommodate user needs with major impact on its structure (ontology). The process of developing a new segment involves forming a new GPC Mission-Specific Working Group (MSWG) to carry out the work. This allows the appropriate subject matter experts and interested parties from across the GSMP community to become involved and to focus on the single mission.

5.6.2.1. Step 1: Business Need

Responsible: GSMP Service Provider, GPC Process Manager, GPC SMG, GSMP Operations, Industry Engagement (IE), Industry User Group (IUG), and Process Oversight Committee (POC)

Inputs: GPC Work Request (WR)

Process:

1. The **GPC Process Manager** reviews the GPC WR with the **GPC SMG** to confirm that it should be classified as "Development".
2. Upon confirmation **GSMP Operations** submits the GPC Development WR to **IE**.
3. **IE** forms an Industry User Groups (**IUG**) who creates a:
   - *Statement of Business Need (SBN)* that defines the industry need that the GPC Development WR is designed to address.
   - *Charter* that defines the work efforts of the **GPC MSWG**.
4. The **POC** reviews the *SBN* and the *Charter* and, in collaboration with the **IUG**, moves the Development Work Request (WR) to become a Development Work Order (WO).
5. The **GPC Process Manager** issues a Call-to-Action to form the **GPC MSWG**
6. The **GPC MSWG** Motions-to-Progress the *SBN* and the *Charter* to **Step 2 Requirements**.

Outputs: GPC Development Work Order (WO), Statement of Business Need (SBN), Charter, Call-to-Action

✅ **Note:** For detailed information on the policies and procedures of Industry User Groups (IUG), refer to the *GS1 Industry Engagement Guide.*

5.6.2.2. Step 2: Requirements

Responsible: GSMP Service Provider, GPC Process Manager, GPC MSWG

Inputs: GPC Development Work Order (WO) and Statement of Business Need (SBN)

Process:

1. The **GPC Service Provider** creates a GPC 'STRAWMAN PROPOSAL' (a visual representation of the proposed GPC Hierarchy and Brick definitions) which is then reviewed by the **GPC MSWG**.
2. The **GPC Process Manager** places the WO Requirements and WO 'STRAWMAN' through a community review (2 to 4 weeks).
3. The **GPC MSWG** resolves all community review comments and Motions-to-Progress the WO to **Step 3: Development**.

Outputs: Approved GPC Requirements and 'STRAWMAN PROPOSAL'

✅ **Note:** The GPC MSWG is no longer required to meet unless the Community and Architecture review in Step 4 lead to comments related to the Development WR.

5.6.2.3. Step 3: Development

Responsible: GSMP Service Provider, GPC Process Manager

Inputs: GPC Development Work Order (WO), Statement of Business Need (SBN), Charter

Process:

1. The submitter of the request prepares a detailed Work Request (WR) using the templates provided by the GPC SMG.
2. The GPC SMG reviews the WR using the criteria in Section 5.5 and either returns the CR for review and revision by the submitter or approves it for deployment.
3. The **GPC Service Provider** updates the GPC Schema base on the approved GPC Requirements and 'STRAWMAN PROPOSAL'.
4. The Updated GPC Schema remains in a holding pattern until the deployment process starts.

Outputs: Updated GPC Schema

5.6.2.4. Step 4: Deployment

Deployment follows the same procedure as defined in Section 5.6.1.3.

6. GPC Publication

GPC has adopted a publication methodology which targets both GDSN Data Pools and the General Trading Partner Community. To facilitate these two audiences, GPC is published in 3 different formats, as shown in Table 1.

Table 1 GPC Published Formats

Targeted Users	Published Format
GDSN Data Pools	■ **GPC Specific (Data Pool) Files –** a set of files to be used specifically by GPC to facilitate Data Pool integration
Trading Partner Community (Beyond GDSN)	■ **GPC Standards**– a series of documents, spreadsheets, and XML files. These files are bundled as individual .zip files and organized in the GS1 Knowledge Centre by Segment ■ **GPC Browser** – A GPC Specific Web-based database that allows for web browsing the GPC hierarchy.

6.1. Publication Schedule

GPC uses a "Consolidated Release" strategy to publish the GPC Schema twice per year, one in May and one in November. This strategy is similar to the release methodology used in eCOM and GDSN maintenance releases.

Figure 6-1 GPC Publication Schedule
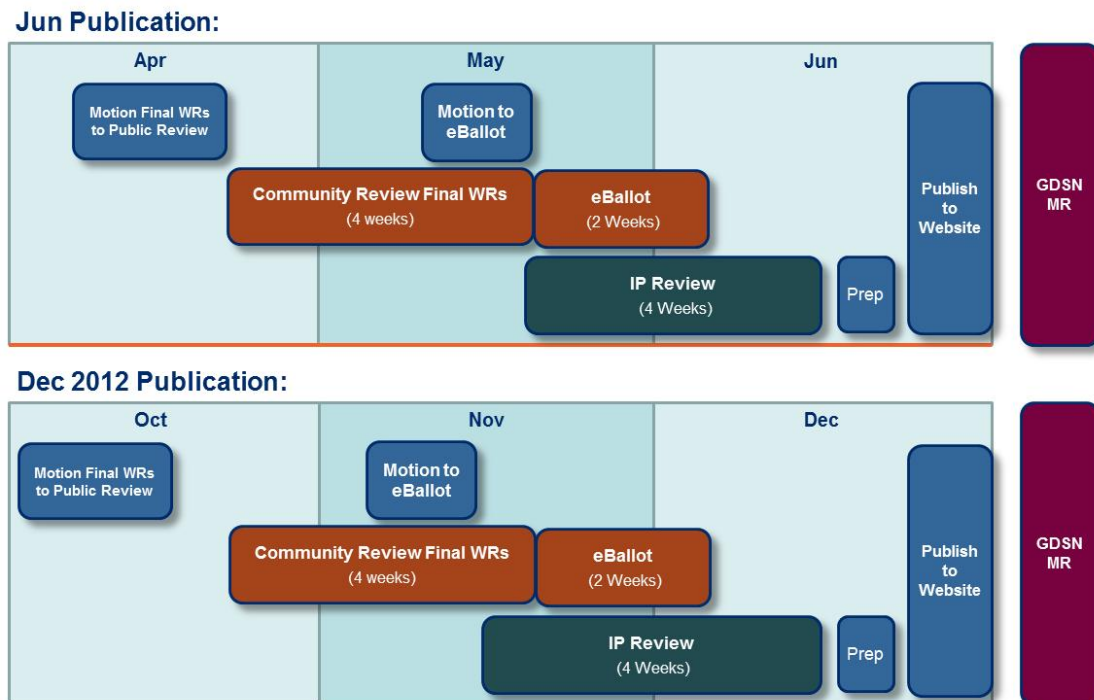
6.2. Release Formats

The GPC Releases are published to the GS1 Knowledge Centre in 2 formats:

■ GPC Schema (Excel and XML format)

■ GPC Browser (Browser-based format, includes translations)

The official (normative) GPC information is published in Oxford English. Both the schema and the browser information are translated to other languages as well. In any case, the English publication is the reference material. The latest GPC publication to be incorporated into GDSN network is also available from the Website.

Figure 6-2 GPC Knowledge Centre Webpage
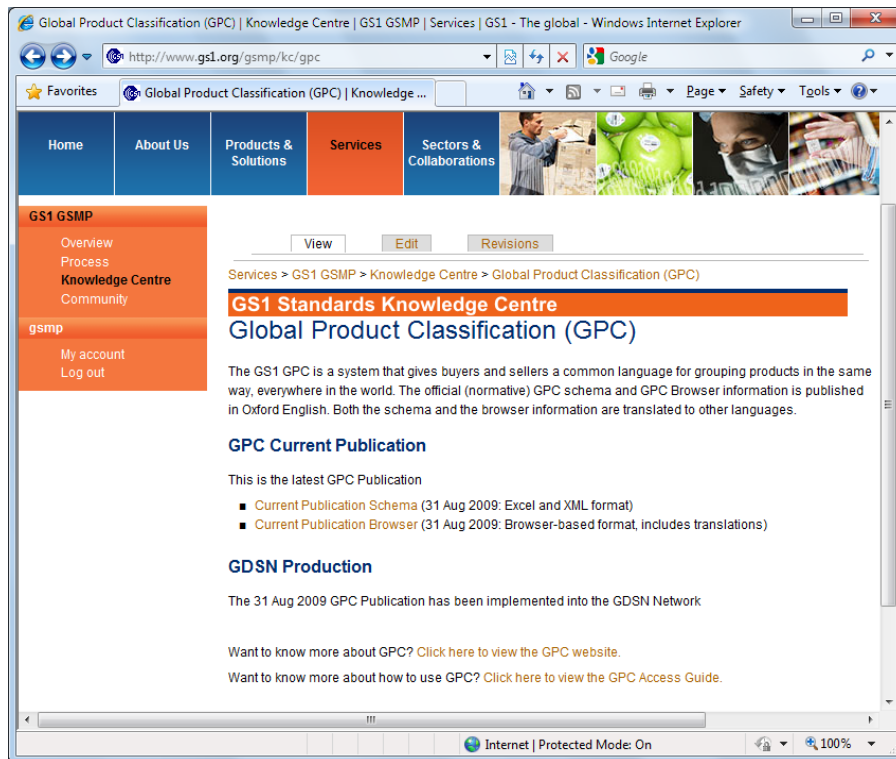
7. GPC Implementation and Integration in GDSN

7.1. GPC Implementation into the GDSN

This section describes the process of GPC implementation in GDSN. This process also addresses the steps whereby a Trading Partner, or a Solution Partner on behalf of a trading partner, cannot find an appropriate GPC code.

A GPC Brick Code MUST be supplied as it is mandatory in the network for a product to be registered:

■ The network will validate codes against the production list of valid GPC brick codes in the GDSN.

■ Valid codes include any published GPC code or "8 nines" which is a temporary code for Segments that either have not been developed or for new products that do not fit with the current schema

■ The network will not/cannot validate if the code used is valid in context (i.e. this Brick code is valid for this product)

The type of code assigned depends on the relationship between the trading partners (TP) and solutions providers (SP)

■ The TP will make every attempt to find the correct code

■ If the correct code cannot be found, they must use "8 nines" until an appropriate code is made available

■ The next step would be to submit a WR, monitor the progress, and once an appropriate code is made available, update their system

■ The GPC schema can only evolve when WRs are received. Every WR is processed individually and so categories can evolve separately at any time. This is the driving force behind GPC's publication release strategy which prohibits version numbers. Each publication is date stamped.

Note: Updates to codes, once a product has been registered, are dependent on the TP/SP implementing changes promptly after they are defined and published in the Delta reports. GDSN has a process for implementing GPC updates within the network. This means that GPC Brick Codes will not be implemented into GDSN as soon as they are released, but as per the publication cycle, usually within 6 months of publication.

7.2. GPC Integration into the GDSN

This section describes the process of GPC integrating GPC codes into the GDSN.

Upon completion of a GPC publication (twice per year) the GPC Service Provider (SP) sends the GDSN two files;

■ **XML Schema** – A complete snapshot of all active nodes in all published standards in the GPC Schema at the point of publication. The purpose of this document is to provide a complete and correct view of what is contained in the GPC Schema at the point of publication.

■ **XML Delta** – An XML document that contains all of the changes between the current and previous publications. The purpose of this document is to enable automatic changes/updates to GPC data contained in the GDSN.

GDSN will integrate/process the XML Delta document.

The XML Delta identifies changes to the GPC Schema by identifying the type of change using change codes and the level of change (Segment, Family, Class, etc.):

■ **Additions:** The introduction of a new code. For every addition the GDSN will add the new codes to their database.

■ **Modifications:** When the code has NOT changed but the textual description or definition HAS changed. GPC Codes are not re-used. If the Brick impacted has a significant definition change the normal process is to add new codes and delete old codes.

For every modification, the GDSN will update the descriptions of the codes impacted in their database.

■ **Marked for Deletion:** Codes that are marked for deletion are removed from the GPC schema publication; however; the codes should not be used to code any items in GDSN until a decision is made to implement the version in GDSN. This is step one of the two-step process to delete GPC Codes. One of the activities that is completed by the GS1 Global Registry as part of this process is to produce a data pool by data pool report of all items and subscriptions that currently use the GPC codes that have been identified as 'marked for deletion'. The intention is to use the period between releases to correct the items or delete the impacted subscriptions. The GPC codes that are marked for deletion become the list of codes that become 'physical deletions' in the next integration in GDSN.

■ **GPC update in GDSN:** For every GPC release, there are deletions. Those deletions become critical to manage in the systems, when the GPC release is implemented in GS1 Global Registry. GPC brick codes that are deleted will be also deleted in GS1 Global Registry when it is implemented. As a result, deleted GPC Codes will not be able to pass anymore GS1 GR if they still are using codes marked as deleted.

7.3. Brick Code Details

■ A = Add (New Data)

■ D = Deletion (Data removed from the Database)

■ M = Modification

The following 3 possible values only apply to the brick in the delta:

■ AM = Add Move = The brick has been added to a segment and moved (AM) from the initial segment. It indicates that a brick has changed its place in the hierarchy, but has not been subject to any change.

■ AMM = Add Move Modify = The brick has been moved and modified (i.e. the brick has changed its place in the hierarchy and its name and/or definition has been changed)

■ DM = Delete Move = The brick has been deleted from one place in the hierarchy then added to another place in the hierarchy. It has a counterpart - DM will have an AM or AMM.

ABREVIATION	MEANING	DATA CREATED	PRE EXISTING DATA
A	ADD	X	
D	DELETE		X
M	MODIFICATION		X
AM	ADD MOVE		X
AMM	ADD MOVE MODIFY		X
DM	DELETE MOVE		X

8. GPC Related Documentation

The following table is a list of all current GPC related documentation.

Document	Description, Audience, and Location
GPC Publication (Schema)	**Description:** Global Product Classification (GPC) is a mandatory standard for GDSN that enables global search and reference, category analysis and global data synchronisation. **Target Audience:** GS1 MOs, Data Pools, Implementers, Software Developers **Format:** Excel and XML Location: GS1 Knowledge Centre - http://www.gs1.org/gsmp/kc/gpc
GPC Publication (Browser)	**Description:** The GPC browser allows you to browse all components (Segment, Family, Class, Brick, Brick Attributes and Brick Attribute Values) of the current GPC schemas. To view Attribute information, click on Brick definitions. Attribute information will open in a new window. **Target Audience:** GS1 MOs, Data Pools, Implementers, Software Developers **Format:** HTML **Location:** GS1 Knowledge Centre - http://www.gs1.org/gsmp/kc/gpc
GPC Basics	**Description:** GPC Basics provides users with an overview of GPC **Target Audience:** GS1 MOs, Data Pools, Implementers **Format:** Web Page and PDF **Location:** GPC Website - http://www.gs1.org/gdsn/gpc
GPC Access Guide	Description: shows users in 9 simple steps how to access the GPC schemas online, identify the GPC Brick and extract all relevant information: Target Audience: Biz Exec; GS1 MOs, Data Pools , Implementers Format: HTML Location: GPC Website - http://www.gs1.org/gdsn/gpc/start
GPC Brochure	Description: GPC Overview Target Audience: Business /Executive Users / GS1 MOs Format: HTML Location: GPC Website - http://www.gs1.org/docs/gdsn/GS1_Global_Product_Classification.pdf
GPC FAQ	Description: GPC Questions and answers Target Audience: Business /Executive Users / GS1 MOs Format: HTML http://www.gs1.org/helpdesk/
GPC Community Room	Description: work in progress GPC related documents Target Audience: Implementers, Software Developers Format: various Location: http://community.gs1.org/apps/org/workgroup/gsmp_g_gpcbrg/

9.   Appendix: GPC Rule Examples

Rule	Definition/Explanation	Example
Broad Area of Differentiation	Products differ at a broad level.	Within Home Appliances Major Domestic Appliances are split out at a high level from Small Domestic Appliances which is a broad area of differentiation.
Broad Area of Application	Products have a differing area of Application	Within Home Appliances, Major Domestic Appliances such as those used for cooking are split out at a lower level into Hob, Oven, Cooker, etc. as their applications differ from each other. As even though they are grouped together according to common purpose an additional split needs to be made for area of application.
Common Purpose and Use	Deciphers the more specific function of the products included in an individual group. The Common Purpose & Usage assists in stipulating a more precise use of the product.	Within Home Appliances, Major Domestic Appliances such as those used for cooking are split out from those used for cooling as their common purpose is completely different.
Processed to Similar Methods	Products have been processed to similar methods.	**Processed** or prepared is determined as; has gone through further manufacturing processes e.g. reformed, cooked, dried, salted, etc, however these products can also be coated, in sauce, stuffed or filled. **Unprocessed** or unprepared is determined as;has not been cooked, dried, reformed, smoked or salted/cured, however can be coated, in sauce, stuffed or filled.
Used and Applied Similarly	Products are used and/or applied similarly	In FMCG products are often grouped according to how they are used or applied. Cosmetics are split out according to whether they are for use on the body, face, nails, etc.
Similar Form & Material	Products are of a similar form or material.	The form of a product would sometimes depend on the preservation method e.g. fresh milk is liquid, shelf stable milk can be dehydrated, etc. However products made from different materials will require a different attribute set which will therefore determine a split.
Powered vs. Non Powered	Products use an external power source or are operated manually.	Powered saws such as chainsaws are split from hand saws as a different attribute set would be required.
Replacement Parts	Products which are solely used as replacement parts to other products currently exisiting within the class.	Powered toothbrush heads which cannot be used alone and are used as replacements parts to powered toothbrushes.
Storage / Preservation	Products are stored and preserved in a similar manner.	The split of a collection of dairy products results from this rule. Bricks must be set up by storage preservation type: Perishable (can be/must be refrigerated), Frozen (are frozen) and Shelf Stable (have been treated or packaged so as to extend consumable life).
Variety Packs	Products which are sold together and comprise products contained in spearate bricks, classes, families, segments or verticals.	Products such as Wine and Cheese combinations which are often packaged together at Christmas or gin sold with tonic, which may or may not be packaged together. Products which come free with other purchases are not included in this principle.
Other	Products which cannot currently be catered for within the existing GPC schema.	Products are placed here if there is no holding place for them within the existing GPC schema. Whilst a proposal for change is submitted this brick within the likely class can be used as a temporary holding ground.
Application / Function	In cases products may have special application / function, which need additional consideration.	General Tools within Hardlines splits tools at a high level based on whether they are powered or manual tools. Before the rule specifically covering this area was intoduced. This would have been seen as a special application / function rule. This is something which particularly drives a split of this type of product.