The Global Language of Business

GS1 Global Product Classification (GPC) Situation Analysis

Information on the current state of the GS1's Global Product Classification (GPC) and its potential growth opportunities.

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1 Purpose

This situation analysis was developed to provide information and a GS1 internal review on the current state of the GS1's Global Product Classification (GPC) and its potential growth opportunities. As we look forward, we can already see the GPC as expanding outside its current existence as a service to Global Data Synchronisation (GDS). The GPC system can be leveraged in industry to use beyond GDS including: Category Management, Governmental Acquisitions, Shelf Management, Business Intelligence, Research & Development, Traceability, and International Trade Data Systems.

2 Executive Overview (Key Points)

- The GPC system gives buyers and sellers a common language for grouping products in the same way, everywhere in the world
- Since 2007, GPC adoption has grown in coverage and in implementation (in parallel with the use of GTINs) in GDS
- GPC is translated by Member Organisations into 18 different languages
- Other Standards Development Organizations (ISO, IEE, etc.) have aligned with GPC, which speaks to its importance in the global supply chain beyond the GS1 Community of End Users
- GS1 is strategically assessing GPC to align it to on-going B2C initiatives as well as leveraging it to industry use beyond GDS including: Category Management, Governmental Acquisitions, Shelf Management, Business Intelligence, Research & Development, and Traceability
- A new publication of the GPC is delivered every six months based on change requests and user input using the GSMP process. Each publication is deployed into the GDSN six months after it is published to provide for transition times for the users to make the necessary changes resulting from the publications. This 'rotation' has been successful for the past 5 years.
- Possible GPC future work streams include; Harmonisation of Tariff Codes for government agencies/customs, Healthcare classification, Web Services to communicate with other information systems, and Context Relationships to more efficiently synchronise similar products

3 What is GPC?

3.1 The GPC Overview

The GS1 Global Product Classification (GPC) system has been in existence since 1999, giving buyers and sellers a common language for grouping products in the same way, everywhere in the world.

Classification is a form of cataloguing, or identifying, things and can be defined as a process of grouping things into categories based on an understanding of the essential properties and relationships between things.

The business objectives of GPC are to:

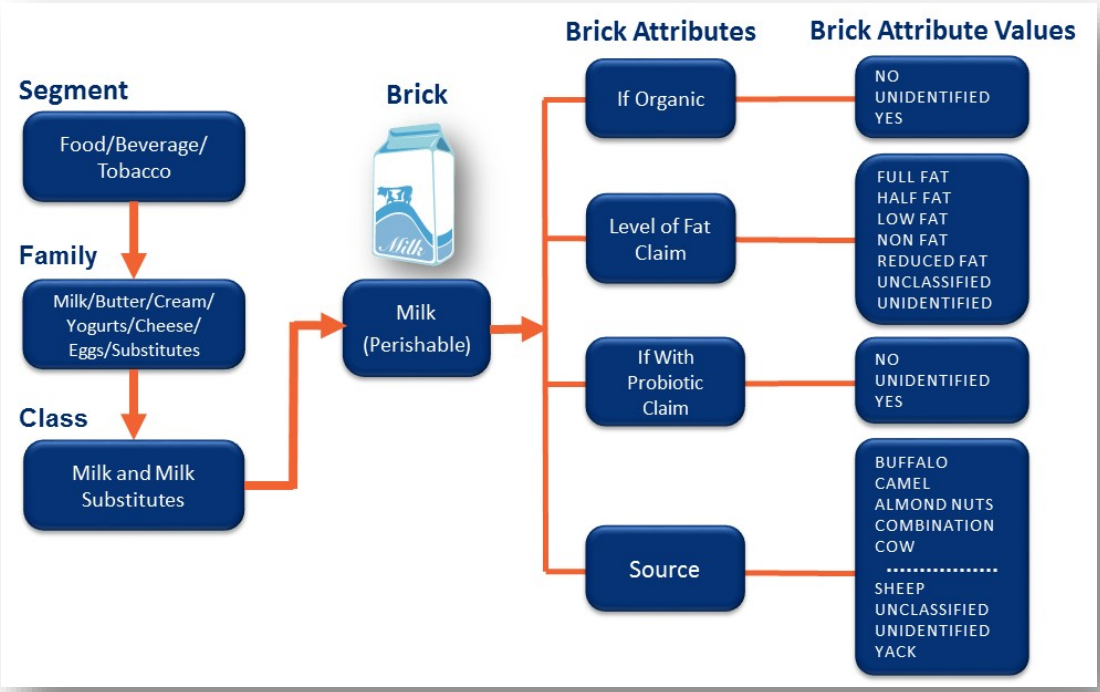
- Support buying programs by allowing buyers to pre-select groups of applicable products
- Provide a common standard for category management, speeding up reaction to consumer needs
- Be a key enabler of the Global Data Synchronisation Network
- To be a pivotal classification system between the information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

3.2 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). The Brick is the foundation of GPC, identifying categories which contain products (Global Trade Item Numbers (GTINs)) that serve a common purpose, and are of a similar form and material. Bricks can be further characterised by Brick Attributes and Attribute Values.

Recognising that a single hierarchy will never fit all business process, GPC bricks can stand alone or may be grouped as needed by others. The GPC tiers help to identify the correct brick and GPC Attributes and Attribute values allow for more detailed classification when required.

A Global Trade Item Number (GTIN) can only be assigned to one Brick.



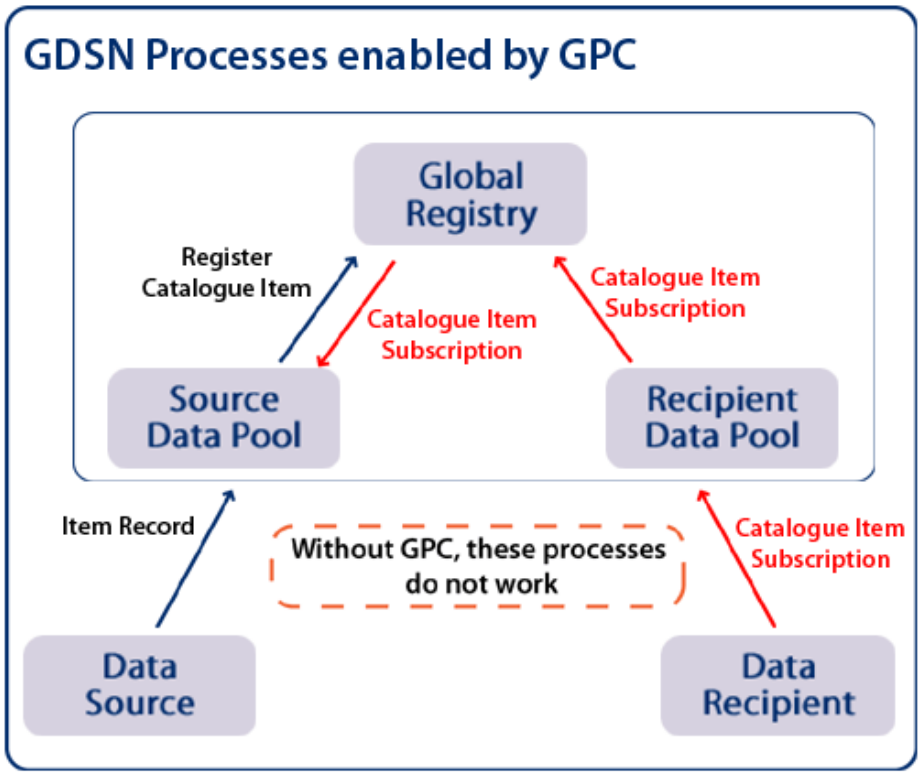
3.3 GPC Rules

The aim of the GPC is to establish a flexible product classification, 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.

3.4 What is the Role of GPC in GDSN?

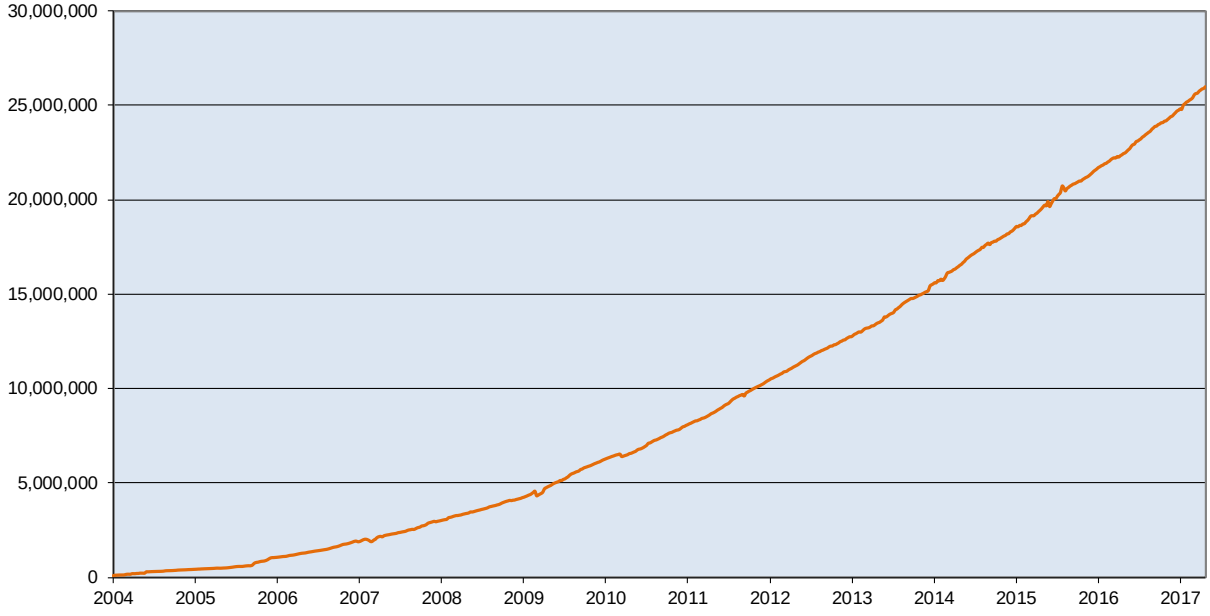
GPC gives buyers and sellers a common language to group products the same way globally to ensure effective data synchronisation in the Global Data Synchronisation Network (GDSN). GPC enables the following processes:

- Item Registration
- Subscription
- Validation
- Data Pool-based Search
- Publication/Subscription Match



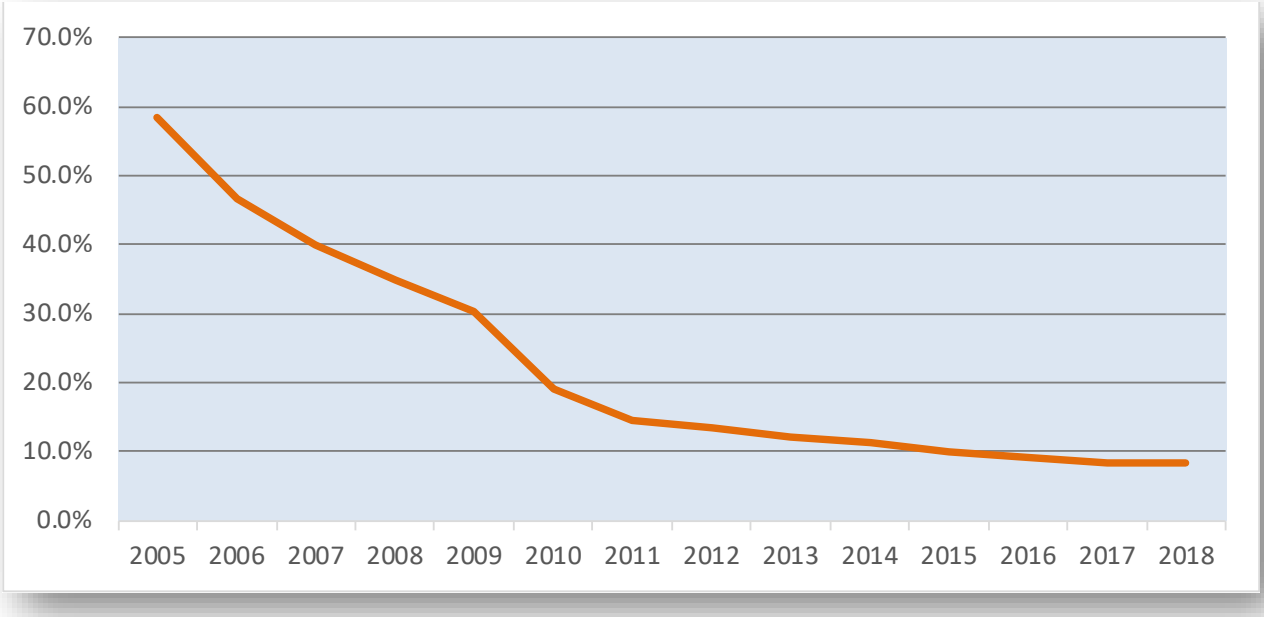
3.5 GPC Adoption in GDSN

The following chart shows GPC adoption in GDSN as of Jan 2018.

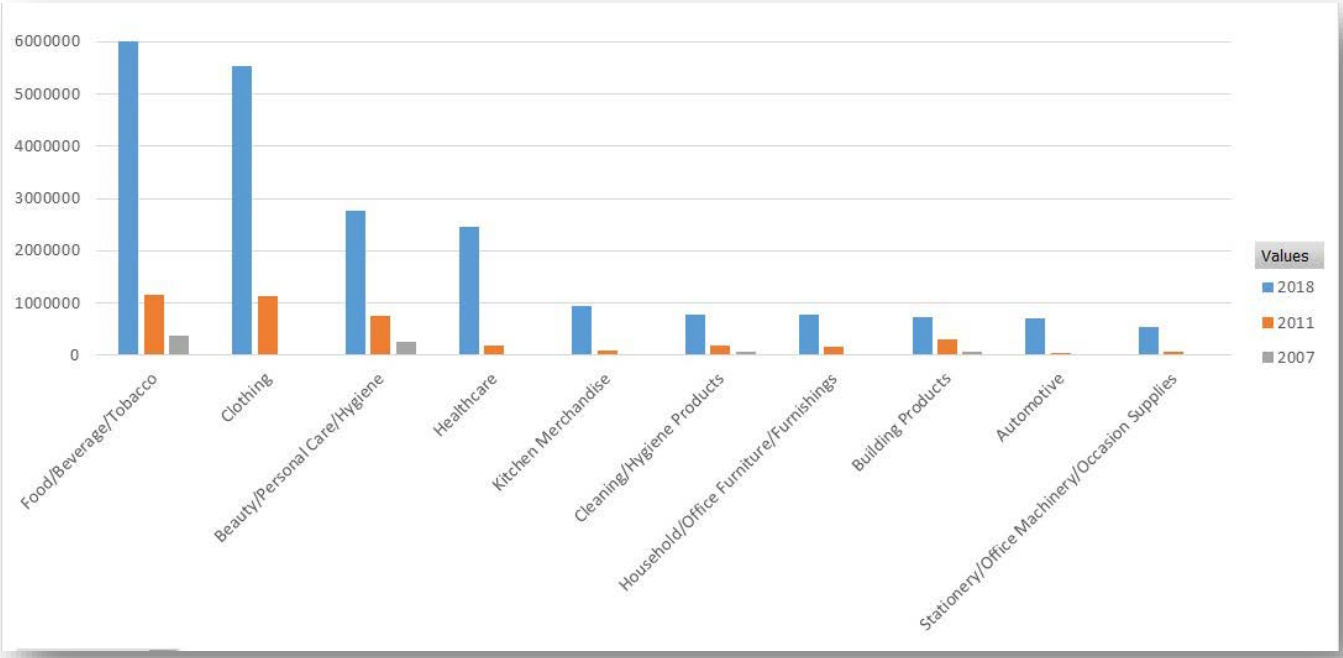


3.6 Implementation of GPC Temporary Brick Codes

The temporary "99999999" brick code is used for products that have not yet been classified within GPC. As the GPC system has expanded and improved, the use of the temporary brick code has decreased.



3.6.1 GPC Brick Adoption by Segment (Top 10)



4 Uses of GPC

4.1 Category Management

GPC is used as a common language to which participating parties map their legacy schemas, and through this process can easily understand how each local classification compares. By using GPC for category management, companies can decide:

- Which products to carry?
- Which products should be displayed together?
- Why and where some products perform better than others

4.2 Shelf Management

With limited shelf space and an abundance of current and new products, retailers must make decisions frequently about which products to stock and how much space to allocate to those products. Many retailers are now turning to shelf management models to help with these decisions.

There is a strong need to use a classification system to enable the common product grouping. In each product category, the retailer will keep the product that provides the best margin efficiency, linked to the product category and the expected sells. Additional decisions regarding shelf space management are required to support products which attract consumers to their stores.

4.3 Business Intelligence Reporting and Analytics

Many companies use data warehousing to extract Business Intelligence data from multiple transactional systems across the globe such as ERP, Purchases, and Accounts Payable. This creates a need for a common standard to perform analysis on an Enterprise wide basis.

GPC's hieratical structure can be used to model data in a multi-dimensional format – allowing companies to have a global view collecting, cleansing, classifying and analysing expenditure data with the purpose of reducing procurement costs, improving efficiency, and monitoring compliance.

4.4 Recalls & Traceability

4.4.1 Recalls

GPC can be used as a standard taxonomy for product category information. In recalls, the type of product helps to determine the level of risk by providing information on the type of product (context) which is recalled. For example, missing information related to an allergen would have more risks on a food item than a non-translated note for an item without those potential risks.

Based on the context, the type of measure can be driven by the combination of "What" is the product and "Which" is the risk.

4.4.2 Traceability

The importance of the standard naming convention is to enable a common language that will be used and understood across the supply chain to facilitate product traceability. Providing information about the type of product will determine the type of traceability that the item belongs too. For example, traceability model of an electronic device will differ from the traceability of orange juice or potatoes.

5 History of GPC

1999

- Voluntary Inter-industry Commerce Solutions (VICS) Board Authorises Product Classification Standards Development (spearheaded by GS1 Canada)
- Uniform Code Council (UCC) Board Approves Product Classification Project

2000

- VICS and UCC collaborate with the United Nations Standard Products and Services Code (UNSPSC) and the Electronic Commerce Code Management Association (ECCMA) Board to a Develop Food & Beverage Classification Segment

2001

- VICS/UCC joins ECR Europe Classification Project under the Global Commerce Initiative (GCI) Board
- EAN /UCC accepts governance role for Global Product Classification (GPC)

2002

- EAN /UCC appoints AC Nielsen to manage GPC

2007

- GS1 appoints GS1 France to manage GPC
- GPC Resources are now at 3 FTE
- GPC and UNSPSC classification systems are mapped - The results were:
  - 15%: 1 to 1 matches
  - 60%: 1 to many matches
  - 25%: no matches

2008

- GPC expands Meat and Poultry classification based on information from the United Nations Economic Commission for Europe (UNECE)

2009

- GS1 Healthcare approved a recommendation to add two bricks to GPC, one for Medical Devices and one for Drugs, for the purpose of use with GDSN. The reason for the limited development was because with over 20 classifications standards, Healthcare users were not ready to migrate to a single one. Growth of the Healthcare sector in GDSN can now be tracked (currently monthly).

2010

- GS1 GO takes over management of GPC and retains GS1 France for support and publication
- GPC Resources are reduced from 3 FTE to 1.5 FTE
- GPC expands classification for fresh foods, plumbing/HVAC, wine bottles, & display fixtures

2011

- GPC expands classification for healthcare, consumer electronics, alcoholic beverages, tobacco, home care – and continues the expansion of fresh foods

2012

- GPC expands classification for building products, bread/bakery products, personal care/hygiene, safety protection, alcoholic beverages, packaged water, sauces, camping equipment, and consumer electronics

2013

- GPC expands classification for the Horticultural sector
- GPC implements significant infrastructure improvements to improve its publications - includes;
  - Compatibility with Multiple Internet Browsers
  - Support for Managing & Viewing Definitions at all Levels
  - Enhanced Translation Tools

2014

- GPC Translates to Arabic
- GS1 is strategically assessing GPC to align it to on-going GDSN and related Business to Consumer (B2C) initiatives – as well as leveraging it to industry use beyond the GDSN including:
  - Category Management
  - Governmental Acquisitions
  - Shelf Management
  - Business Intelligence
  - Research & Development
  - Traceability

2015

- GPC expands classification in the Books/Periodicals and Computer Games sector

2016

- GS1 GO takes over support and publication of GPC
- GPC expands classification in the Crops / Farming Products sector to support GS1's sustainability efforts
- GPC translates to Persian & Serbian

2017

- GPC is incorporated into the GS1 Cloud's search engine
- GPC translates to Turkish & Spanish

6 GPC and other Global Classification Systems

6.1 Local Players

Local Players are difficult to identify and analyse without knowing the local market. The main competitive advantage of a local classification system, in addition its historical relevance, is that it exists in the local language. This supports the on-going need for GPC translations (refer to *section 12* for more information).

6.2 International Players

International Players, are less numerous and easier to identify. Due to their morphology (addressing multiple countries in one or more continents), they can slow down GPC adoption.

The following "International Players" competitors/cousins are identified:

- **UNSPSC** – classification system which covers all types of market segments including raw products, semi-finished goods, and services. UNSPSC is financed by the UN Development Programme (UNDP) and managed by GS1 US. It is more detailed than GPC in pharmaceuticals and medical devices. Both GPC and UNSPSC user communities have access to the other system without having to invest effort in their own mapping.
- **CPV** (Common Procurement Vocabulary) – classification system used by the European Union for public procurement of products, services, and works. Primarily financed by the European Community with no roadmap, CPV is release every 3 or 4 years with no formal review by experts. The CPV classification structure allows the use of attributes and values; however they are not actively used by the community. CPV is translated in 22 languages.
- **eCl@ss** – classification system used and managed 80% German companies in sectors such as automotive, chemical, and healthcare. eCl@ss is financed by the European community, the German government, and other various users. It is active in standardisation (ISO 13584, ISO 22 274, CEN workshops) and competes with GPC and UNSPSC in the healthcare segment.
- **Harmonized System (HS)** - designed primarily for, and required to be used in, customs documents for the purpose of applying trade tariffs. HS is maintained by the World Customs Organization (WCO) and requires international governmental consultation and approval.

6.3 CEN/WS/eCAT

Initiated by Infoterm and TermNet, CEN/WS/eCAT was set up by the European Standards Commission (CEN) with the support of the European Commission. The CEN/WS/eCAT produced a Workshop Agreement on "Classification Mapping for open and standardised product classification usage in eBusiness". The cMap facilitated delivered the CWA 16138:2012 which aligns the mapping 4 classification systems: GPC, UNSPSC, CPV, and eCl@ss.

7 Example of Companies that use GPC outside of GDSN

Best Buy integrates GPC with their Oracle Retek and SAP systems for:

- Category selection and the attributes to drive internal systems including:
- Merchandise Category Level 1 to drive product hierarchy and internal systems including:

Organisation for Economic Co-operation and Development (OECD) integrates GPC into their GlobalRecalls portal:

- OECD's GlobalRecalls portal is an online tool that contains regularly updated information on consumer product recalls issued by jurisdictions around the world.
- The search features and multi-lingual capability of the portal uses product identification (GTIN) and global product classifications (GPC) to gather information on recalled products from jurisdictions in real-time.

Food Gate integrates GPC into their B2B Online Trading Platform:

- Food Gate's ***Map of Companies and Goods*** allows users to search for producers and distributors and obtain reliable information
- GPC is fully integrated into the platform to support the search for products and analogues
- All products have a single international classification, describing the product itself and its parameters

Argentine integrates GPC into their Taxation and Food Safety systems:

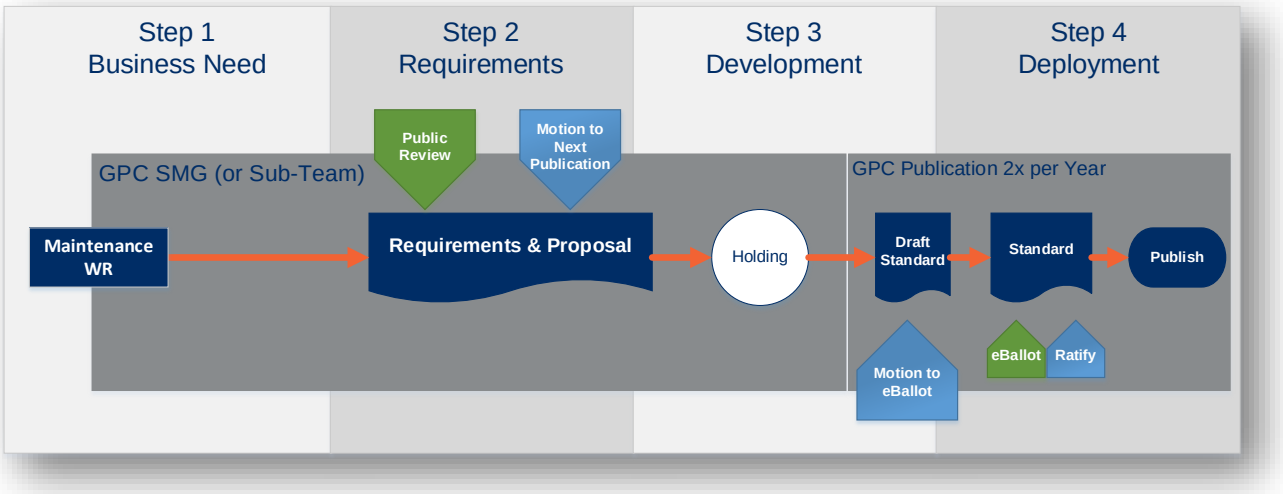
- The Argentina Administración Federal de Ingresos Publicos (AFIP) uses the GPC and GTIN database for the electronic invoicing
- The Argentina National Food Safety and Quality Service (SENASA) uses the GPC and GTIN database to implement the traceability system for agrochemicals and veterinary products

8 Possible GPC Future Work Streams

- **Harmonisation of Tariff Codes (Regulatory Applications)** - While typically used to determine the cost of goods that cross international borders; Tariff Codes can also be used for traceability. There is an opportunity for GPC to be leveraged to provide more granularities to these codes. GPC provides more information concerning the context of the product which is far more developed and useful for Government agencies and Customs. Further advantages of GPC include global management and multi-lingual categorisation.
- **Web Services** – There is an opportunity to rebuild our current GPC database infrastructure to support web services, which will allow for more efficient communication with other information systems and significant improvement of search capabilities.
- **Context Relationships** – GPC will be used as the basis for creating product based context in GDS, grouping similar products to determine what information should be sent per trade item during data synchronisation.
- **Online Retail** – GPC could be used as the basis for organizing online retail products to increase search relevancy and better improve the overall experience for consumers.

9 GPC Development and 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.

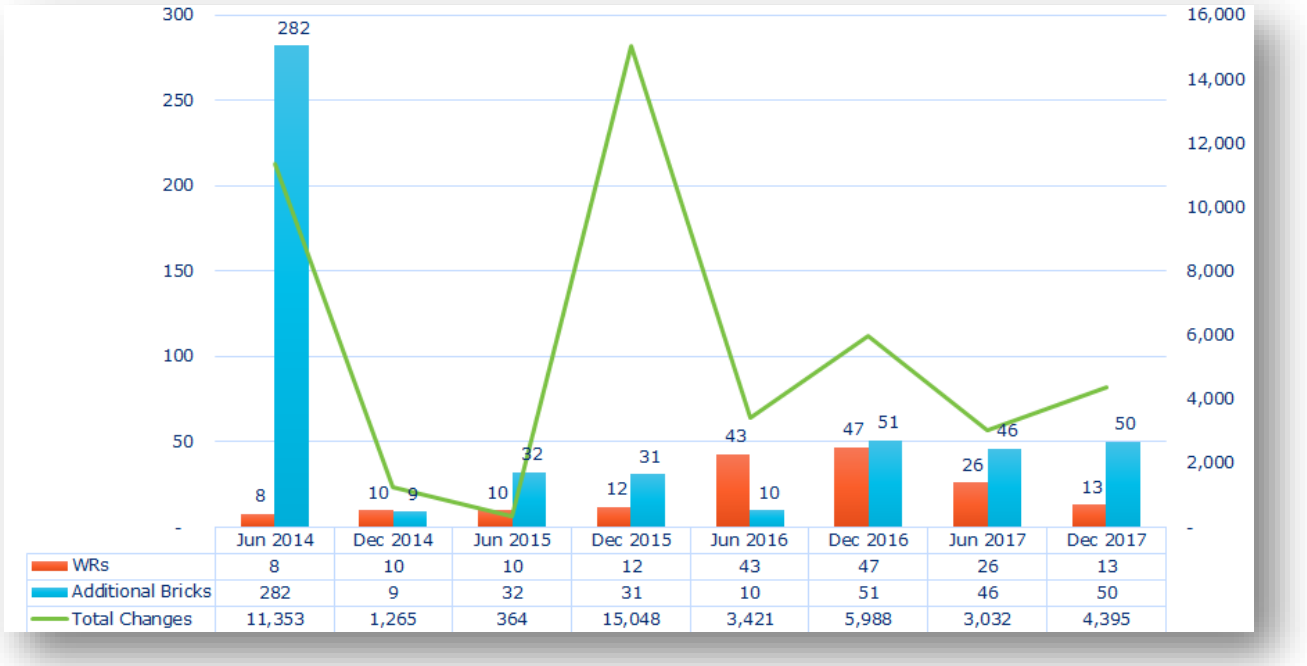


The following GPC WRs have been processed and delivered since 2011:

GPC Publication	Work Requests Delivered & Changes Implemented
GPC Dec 2011	**10 GPC Work Requests Delivered:** 11-157 11-188 11-161 11-189 11-165 11-190 11-176 11-191 11-184 11-219 New Bricks Developed: **24** Total changes: **1,205**
GPC Jun 2012	**18 GPC Work Requests Delivered:** 11-125 11-168 11-169 11-170 11-171 11-172 11-183 11-185 12-008 12-012 12-015 12-033 12-052 12-065 12-071 12-089 12-034 12-132 New Bricks Developed: **17** Total changes: **4,284**
GPC Dec 2012	**15 GPC Work Requests Delivered:** 12-002 12-010 12-011 12-016 12-017 12-073 12-083 12-093 12-111 12-146 12-161 12-166 12-167 12-168 12-179 New Bricks Developed: **52** Total changes: **9019**
GPC Jun 2013	**8 GPC Work Requests Delivered:** 12-009 12-072 12-124 12-229 12-279 12-308 12-361 13-022 New Bricks Developed: **63** Total changes: **4,369**
GPC Dec 2013	**19 GPC Work Requests Delivered:** 12-360 13-067 13-068 13-057 13-059 13-017 13-062 13-058 13-081 13-072 13-061 13-103 13-041 13-115 13-063 13-034 13-060 13-071 13-101 New Bricks Developed: **70** Total changes: **71,461**
GPC Jun 2014	**8 GPC Work Requests Delivered:** 12-305 13-073 14-008 14-009 14-030 14-036 14-041 14-032 New Segments: **1** New Bricks Developed: **282** Total changes: **11,364**
GPC Dec 2014	**10 GPC Work Requests Delivered:** 14-046 14-047 14-048 13-024 13-035 13-039 14-115 14-118 14-114 14-164 New Bricks Developed: **9** Total changes: **1,265**
GPC Jun 2015	**10 GPC Work Requests Delivered:** 14-202 15-011 14-116 15-051 14-172 14-177 14-178 14-199 14-117 14-112 New Bricks Developed: **32** Total changes: **364**
GPC Dec 2015	**12 GPC Work Requests Delivered:** 14-203 15-062 14-085 15-065 15-066 15-052 15-219 15-136 15-137 15-184 15-227 15-249 New Bricks Developed: **31** Total changes: **15,048**
GPC Jun 2016	**42 GPC Work Requests Delivered:** 15-250 15-251 15-252 15-253 15-254 15-255 15-256 15-261 15-262 15-263 15-264 15-265 15-266 15-267 15-268 15-269 15-270 15-272 15-274 15-275 15-276 15-277 15-278 15-283 15-292 15-293 15-294 15-296 15-320 15-327 15-356 15-361 15-363 15-374 16-127 16-144 16-162 16-169 16-171 16-174 16-264 16-265 New Bricks Developed: **10** Total changes: **3,421**

GPC Publication	Work Requests Delivered & Changes Implemented
GPC Dec 2016	**47 GPC Work Requests Delivered:** 15-271 15-273 15-358 15-375 15-376 15-378 15-379 15-380 16-129 16-130 16-131 16-132 16-133 16-152 16-153 16-161 16-163 16-188 16-189 16-190 16-193 16-194 16-195 16-137 16-138 16-203 16-256 16-347 16-176 16-196 16-200 16-205 16-208 16-209 16-212 16-263 16-319 16-338 16-348 16-391 16-392 16-461 16-462 16-472 16-478 16-481 16-480 New Segments: **1** New Bricks Developed: **51** Total changes: **5,988**
GPC Jun 2017	**26 GPC Work Requests Delivered:** 16-199 16-231 16-232 16-233 16-234 16-235 16-236 16-237 16-238 16-297 16-305 16-357 16-387 16-388 16-393 16-405 16-464 16-521 16-535 16-539 16-463 17-049 17-053 17-072 17-080 17-081 New Bricks Developed: **46** Total changes: **3,032**
GPC Dec 2017	**13 GPC Work Requests Delivered:** 17-003 17-030 17-046 17-058 17-068 17-099 17-126 17-160 17-222 17-235 17-254 17-255 17-260 New Bricks Developed: **50** Total changes: **3,915**

9.1 GPC SMG Work Request Activity



10 GPC Publication

GPC has adopted a publication methodology which targets both GDSN Data Pools and the General Trading Partner Community. To facilitate these audiences, GPC is published in the following formats:

- **GPC Standards**– a series of documents, spreadsheets, and XML files. These files are bundled as individual .zip files and organised on the GS1 website by segment as well as one combined set of files
- **GPC Browser –** A GPC specific web-based database that allows for web browsing the GPC hierarchy.
- **GPC Specific (Data Pool) Files** – a set of files to be used specifically by GPC to facilitate Data Pool integration
- **GPC Publication Release Notes** - summary information on the added, modified and deleted records of the associated publication as compared to the previous publication

10.1 Publication Schedule

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

10.2 Release Formats

GPC is published to the GS1 Knowledge Centre in two 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.

11 GPC Implementation into GDSN

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 (or temporary) GPC codes 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). If the TP cannot find the correct code, they must use the temporary “99999999” until an appropriate code is made available

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.

Each GPC release is typically implemented into the GDSN five to six months after publication. This gives impacted Data Pools and Trading Partners the opportunity to update their systems.

12 GPC Translations

Oxford English is the reference language for GPC management as it is stated in GPC rules. However, to support GPC adoption around the world, GS1 manages a team of MO representatives who provide GPC translations through a “GPC Translations Tool”. Translated versions of GPC can be accessed by the public on the GPC Website along with the official Oxford English version.

Allowing access to the tool for translation and publication is an exceptional and strong advantage of GPC towards other existing classification systems. GPC supports 20 translated languages as of Mar-2018):

- Arabic (Jordan)
- Chinese
- Czech
- Danish
- Dutch
- Finnish
- French
- German
- Hungarian
- Italian
- Japanese
- Latvian
- Macedonian
- Norwegian
- Persian
- Portuguese (Brazil)
- Russian
- Serbian
- Spanish (Mexico)
- Swedish

13 GPC and the GS1 Cloud

GPC is Core Attribute in the GS1 Cloud, supporting Search functionality. For companies looking for new products to carry in their physical or online store, Search Function gives them the ability to discover new products by Global Product.

Attributes	Check	View	Explore
1. GTIN	★	★	★
2. Brand		★	★
3. Label Description		★	★
4. Medium Resolution Image		★	
5. Target Market		★	★
6. Company Name		★	★
7. Product Classification			★

★ Required for service ★ Service enhanced as a result

14 Conclusion

The GPC system gives buyers and sellers a common language for grouping products in the same way, everywhere in the world.

Within the suite of GS1 product offerings, GPC has the unique position of serving as both a GS1 Standard and a GS1 Solution. The GPC standard is managed by GS1's GSMP process, however the implementation of its classification scheme (browser), can be centrally managed outside the GSMP.

As we look forward, we can already see the GPC as expanding outside its current existence as a service to Global Data Synchronisation (GDS). The GPC system can be leveraged in industry to use beyond GDS including: Category Management, Governmental Acquisitions, Shelf Management, Business Intelligence, Research & Development, Traceability, and International Trade Data Systems.

15 Appendices

15.1 Current GPC Leadership Team Members

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