GUIDANCE FOR USING E-COMMERCE DATA TO MANAGE PRODUCT ADMISSION AT INTERNATIONAL BORDERS

Guidance for International Trade Data System Participating Government Agencies

DECEMBER 2010

ITDS Product Information Committee

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SUMMARY

Nearly all US government agencies are interested in improving the effectiveness and efficiency of their product admission process at international borders. One common challenge is the limitation of harmonized tariff schedule (HTS) codes, used primarily to set tariff rates and to make jurisdictional and product risk decisions. But today the availability of e-commerce logistics data, a set of global standards and processes that has been maturing over the past 15 years, offers a new opportunity. This report seeks to provide an understanding of how e-commerce data could be integrated into the decision-support process for government admission of products at international borders. It also reviews the level of maturity for various underlying e-commerce processes that are critical for successful adoption.

Two basic approaches are possible for integrating e-commerce product data into admissibility decisions. These are:

Transactional Implementation: The first approach involves the importer or broker including an international product classification code in each entry submission for as many products (line items) as possible. The product classification code information provided with each transaction provides additional product characterization that can be used in automated or examiner-reviewed systems to supplement the HTS code. The additional provision of a globally unique product identification number, known as the Global Trade Item Number (GTIN), allows products to be managed at the brand and model level instead of the product type level for smarter product management, but its use is optional for the transactional approach. This implementation works best for raw products or products for further processing or assembly that have a fairly simple risk profile.

Catalog-Based Implementation: The second approach involves the importer or broker including the GTIN in each entry line submission to identify as many products in the entry as possible by brand and model. Instead of importers or brokers providing product classification code information in every entry submission, suppliers publish the product GTIN along with the international product classification code and code attributes that describe complex risk factors in a global product catalog. The government uses the GTIN to access an array of detailed product classification and description information from the global catalog. The detailed product information is then used by government in automated or examiner-reviewed systems to make admissibility decisions. When products are identified with a GTIN and the supplier has published information for that product in a product catalog, *importers only need to provide ONE data element, the GTIN, for the catalog-based implementation to work.* This implementation works best for finished products that are commonly identified by a GTIN.

The ability to identify any product in an entry by GTIN creates a powerful new efficiency. *Once an agency has determined the admissibility of a specific product brand and model identified by a GTIN, that agency can apply that same admission action by default every time that GTIN reoccurs in future shipments (subject to periodic verification).* Unique product identification allows government to learn and react from its prior experience with a product, efficiency not possible when products are identified only by their HTS code and narrative descriptions.

Implementation Steps: A series of implementation steps is proposed for government and industry to follow should they wish to test the integration of these solutions. These steps are outlined below:

- Government should target one or more higher-risk product sets where more granular product information would provide potential benefits to public health, public safety, or environmental protection;
- Government and industry should cooperatively review and revise International Product Classification Codes to reflect attributes of interest in product admission;
- Government should modify their IT systems to accept e-commerce product data such as GTINs and international product classification codes in the entry submission;
- Product suppliers should publish international product classification code information for finished products into catalogs for government access;
- Government should consider accessing industry global product catalogs to download e-commerce product information for each product GTIN provided by the importer; and
- Government should revise targeting algorithms to include international product classification codes and capture admission decisions by GTIN to enhance jurisdiction and product admission decision-making.

The product sets that present the greatest risk to the consuming public tend to be those that are traded in the open global supply chain and are packaged for direct sale to consumers. These are the same product sets that are most likely to be identified with GTINs and can be readily characterized by the assignment of an international product classification code.

Because of the close partnership between government and trade needed to validate and successfully test the recommendations in this report, this report was provided to the trade in draft and comments were solicited. Industry comments and responses to the issues raised by those comments are provided in Appendix C.

PURPOSE

This report describes two basic implementation options and assesses the maturity of underpinning e-commerce processes involved in the use of e-commerce data at international borders to improve the precision and efficiency of product admission. It is based on a concept first introduced in the International Trade Data System (ITDS) April 2009 Product Information Committee (PIC) report entitled "Leveraging E-Commerce Data for Smarter Cargo Management" which is available at the ITDS web site, www.itds.gov. More details about the Product Information Committee and the April 2009 report are provided in the Background Section at the end of this report.

Note that pilots are being undertaken by ITDS for several higher-risk product sets and the results of these studies will be reported in 2011 to more precisely define the benefits, cost, and effectiveness – the business case –for the adoption of these processes.

NEED FOR CHANGE IN ADMISSIONS PROCESS

The ITDS April 2009 report concluded that the Harmonized Tariff Schedule (HTS) codes, while critical in the duty assessment process, do not provide the government with sufficient product characterization information to make product jurisdiction and risk determinations efficiently.

Government needs globally consistent product identification and characterization information for efficient cross-border management of imports and exports. Solutions need to scale globally to gain industry support for adoption.

In the post 9/11 environment, importers are being asked to provide new information related to security, so the population of other data elements in the entry record needs to create off-setting business efficiencies for both industry and government if they are to be adopted.

Tightening Federal government budgets in the US and around the globe require government cross-border operations to consider highly efficient approaches that can be implemented at a low cost. These solutions need to improve product transparency to enable government to make prompt, confident admission decisions. The integration of e-commerce data as a supplement to HTS codes offers government a promising opportunity for accomplishing this goal.

PROPOSED E-COMMERCE-BASED SOLUTIONS

Participating government agencies (PGAs) of the International Trade Data System, the US forum for implementing a "single-window" approach to trade, are investigating the use of e-commerce data to improve the product admission process at US borders. The proposed approach would:

- Use globally unique product identification references known as Global Trade Item Numbers (GTINs) when available to precisely identify products;
- Use global product characterization codes, specifically the Global Product Classification (GPC) codes or the United Nations Standard Product and Service Code (UNSPSC) numbers that would be provided with each entry filed by importers or from global electronic catalogs when available;
- Use the Automated Broker Interface to transmit GTINs and global classification codes to participating government agencies[1];
- Develop government systems that can access information in global electronic catalogs for products identified by a GTIN in the entry submission; and
- Drive voluntary adoption by creating business value for industry and government beginning with higher-risk product sets that impact public health, public safety, or environmental health.

[1] The Participating Government (PG) message set for the Automated Broker Interface (ABI) can be linked to the entry or entry summary ABI messages. The Customs and Trade Automated Interface Requirements (CATAIR) defines the record sets used by the importer or importer filer. The importer or importer filer would be the responsible party for providing the GTIN and other e-commerce data, not the carrier.

For this discussion, it is critical to understand the difference between GTINs and global product classification codes. GTINs provide product *identification* (a reference to a unique supplier's specific product that has consistent product features and packaging characteristics), and global product classification codes provide product *characterization* (a reference to a commodity category which has a defined set of product characteristics shared by all assigned products). GTINs tell you *which* product brand and "model" it is, and classification codes tell you the *characterization* of a product assigned to that category. Together they tell you that the product brand and model denoted by the GTIN has the characteristics denoted by the product classification code.

IMPLEMENTATION OPTIONS

Since the April 2009 report, government agencies have considered a number of practical alternatives for integrating e-commerce product data into the entry data stream. Two implementation approaches have emerged. One approach is transactional, in that the e-commerce data must be included with each entry line filed. The second uses electronic product catalogs to access e-commerce data, requiring that the government obtain catalog access for its IT system. The two implementations are complementary, so both could be used for different lines of the same entry. Certain product sets such as unfinished goods are expected to best fit the transactional approach, while finished product sets such as consumer goods will best fit the catalog-based approach. Thus, the selection of one implementation option over the other will depend upon the nature of the product set as well as the availability of electronic product catalog data to each agency.

The "Transactional" Implementation

The "Transactional" integration of e-commerce product data into the entry data involves providing a data field in the entry record for importers to report a globally unique product identification number known as the "Global Trade Item Number," or GTIN. Additionally, data fields in the entry record would allow for the provision of a GS1 Global Product Classification (GPC) "brick" code[2] and/or the United Nations Standard Product and Services Code for each product in the shipment. If importers are able to provide this information transactionally, PGAs could improve their decision making process for products contained in each entry shipment and expedite the entry process. An overview of the transactional process is shown below:

[2] The GPC brick code defines a base-level category of similar products.

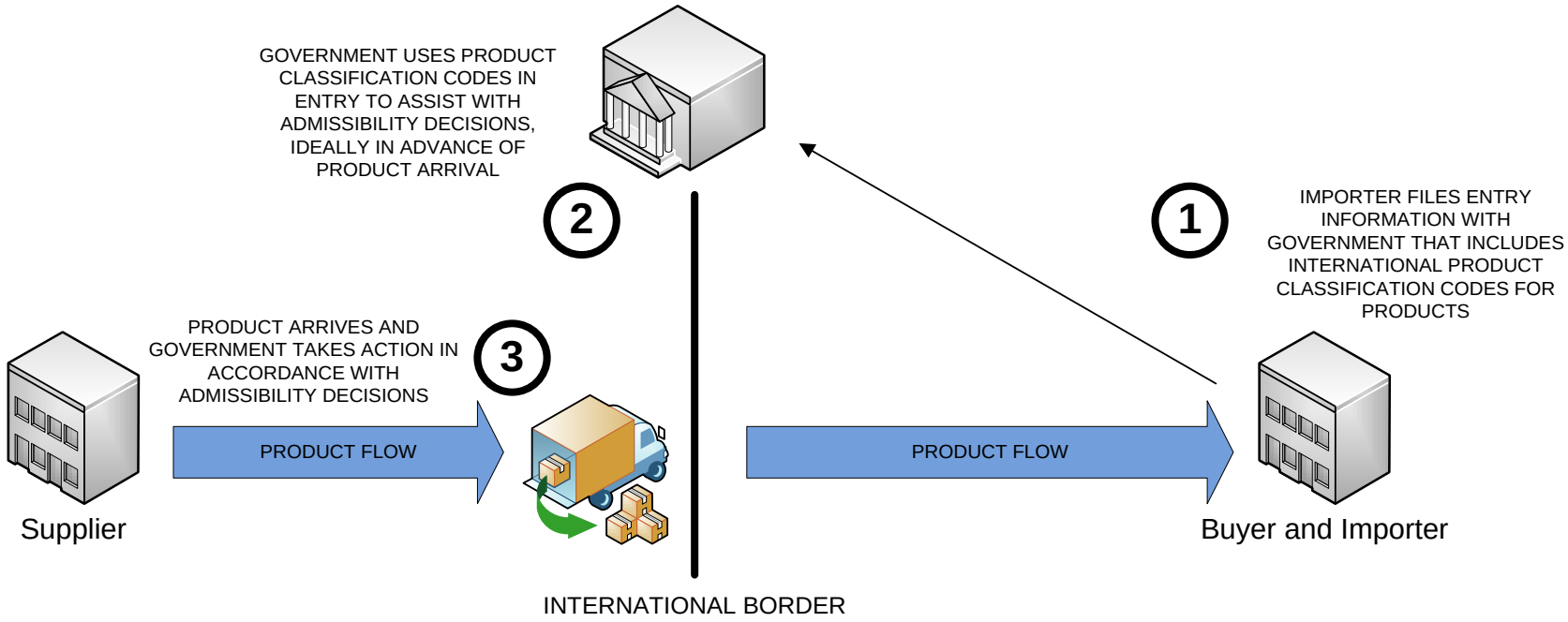

Figure 1: Overview of the Transaction Implementation where Importers Provide International Product Classification Codes for Products

Invoices and Advance Shipping Notices already often contain GTIN numbers for each product. And the maintenance organizations for both the GPC (gpcbrowser.gs1.org) and the UNSPSC (unspsc.org) have interactive web sites that suppliers and importers can use to determine international classification codes for their imported products. Ideally, importers and brokers would obtain these values directly from the supplier or by querying electronic product catalogs to obtain accurate values for the GPC and UNSPSC codes published by the supplier.

The "Catalog-Based" Implementation

The "Catalog-Based" integration of e-commerce product data allows the government to take advantage of detailed classification information for products without burdening the importer to enter this information into the entry record. Instead, the government subscribes to a global electronic product catalog and uses the GTIN provided by the importer to "look-up" static product

classification and descriptive information from the product catalog. Importers and brokers would obtain GTIN values from invoices or from Advance Shipping Notice message files. The degree to which GTINs can be provided AND the degree to which suppliers of those products have published complete information in a global electronic catalog will determine the extent to which government agencies can improve their decision making process using the catalog-based implementation option.

Although the catalog approach requires that product information be looked up in the global product database, this approach can be more efficient and accurate than requiring classification codes to be reported with each transaction. The product information is provided by the supplier in global catalog using a publish-once, reuse-many times approach, reducing the cost of data provision compared to providing product information for every transaction. Getting product data directly from the supplier instead of the importer, who may not be the supplier and may not be familiar with all aspects of a product's characteristics, improves the accuracy and authority of the product information.

Additionally, the use of the GTIN allows government agencies to remember and reapply its admission decision once a determination has been made regarding the admissibility of a specific product brand and model identified by a GTIN. Every time that GTIN reoccurs in future shipments, that agency can apply that same admission action by default, with occasional verification examinations. Unique product identification allows government to learn and react from prior experience with a product, efficiency not possible when products are identified only by their HTS code and narrative descriptions.

An overview of the catalog-based process is shown in Figure 2 below.

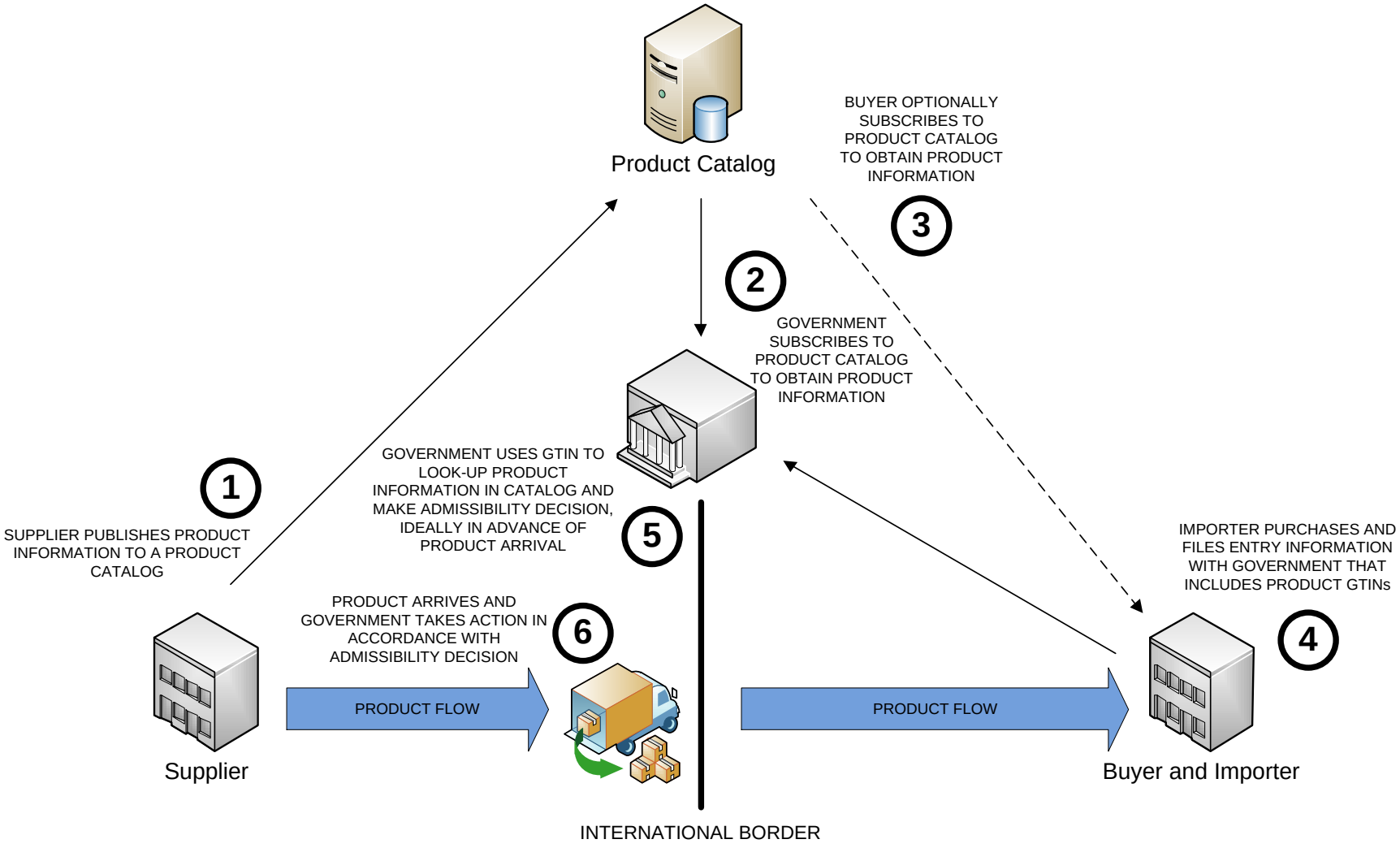

Figure 2: Overview of the Catalog-Based Approach

The strength of this approach is the quantity of product information and the level of detail that the government can access using the product catalog. Using the catalog, the importer only needs to provide the product GTIN to allow the government to access published information about that product in the catalog.

In particular, the GPC product classification attributes can provide extremely precise definition about complex product features that can dramatically improve product risk assessments. For example, the HTS codes for meat will indicate the species of the product and whether the product is chilled or frozen, boneless or bone-in, and processed. However, the GPC attributes for this same product will not only reveal these factors in more detail, but include other factors of value in determining product risk such as level of cooking and the exact cut of meat. Asking for this same level of detailed information on a transactional basis from the importer or importer filer would be difficult and inefficient. An example of how GPC attributes extend product granularity beyond the HTS code is shown in Figure 3 for a meat product.

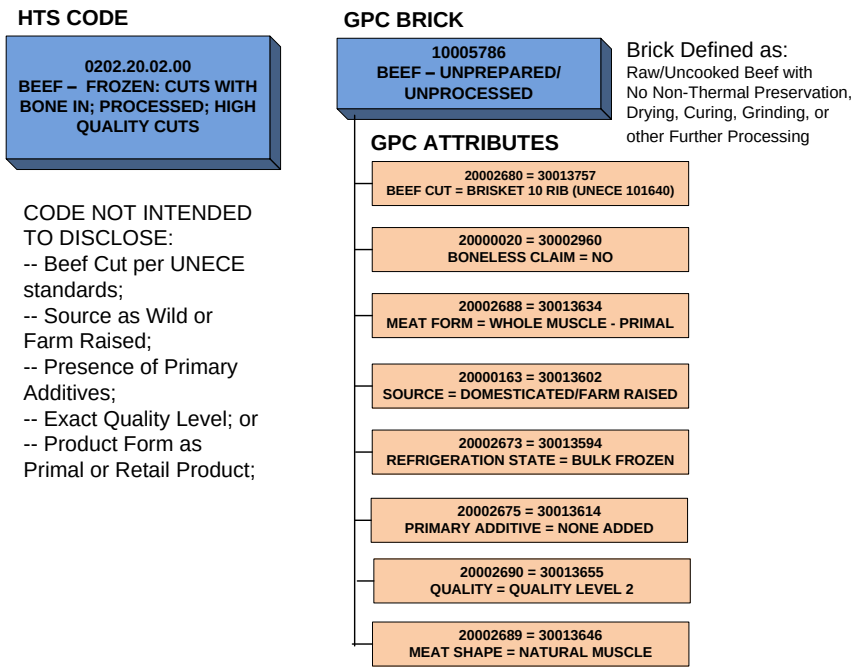

Figure 3: An example of the granular product information provided by Global Product Classification Attributes

Note that for both implementations, the use of e-commerce data will have different utilities for different government agencies – the outcome is not always automated decisions about product release or holds. Some government agencies, particularly those with complex business rules regarding admissibility, will use the data largely to clarify jurisdictional decisions while other agencies will be able to use the data for assistance in setting risk levels for specific products to guide follow-on inspection efforts. *But once an agency has determined the admissibility of a specific product form identified by a GTIN, that agency could automatically enforce that same action every time that GTIN reoccurs in future shipments.*

The provision of GTINs and international product classification information, in addition to the HTS codes, can dramatically improve the ability of government agencies to manage and respond to specific product instances by indicating more precisely WHAT is in the shipment. But there is additional value when importers also report in the entry submission the location of the product GTIN by container number – agencies then know WHERE each product is within a shipment. This allows the agency to isolate or target as few containers as possible when a product GTIN requires physical inspection.

IMPLEMENTATION PROCESS

The following implementation steps are offered for moving the US government and industry towards the use of business e-commerce data for product admission at international borders:

IMPLEMENTATION ACTIONS R = Responsible; A = Assists; C = Consulted; I = Informed	**ITDS-PIC**	**PGAs**	**INDUSTRY**
STEP 1. Build industry and government consensus to **target higher-risk product sets of interest** where e-commerce data (GTINs and electronic catalogs) are commonly used in the supply chain	**R**	**A**	**A**
STEP 2. Have **government and industry review GPC and UNSPSC codes** of the targeted product set for use in cross-border trade	**R**	**A**	**A**

IMPLEMENTATION ACTIONS R = Responsible; A = Assists; C = Consulted; I = Informed	**ITDS-PIC**	**PGAs**	**INDUSTRY**
STEP 3. Have **government, with industry assistance, revise GPC and UNSPSC codes** through standard body's Change Request process to provide missing essential product information	**R**	**A**	**A**
STEP 4. Have **suppliers publish product information into catalogs** for imported products for government and industry access	**I**	**I**	**R**
STEP 5. Have **government modify entry process to accept GTINs in the entry.** Also add support for including international product classification codes in the entry submission	**R**	**A**	**C**
STEP 6. Have **importers or brokers provide product GTINs** for finished consumer goods as part of entry submission (catalog option)	**I**	**I**	**R**
STEP 7. Have **importers or brokers provide product classification codes** as part of entry submission for unfinished goods, products that do not have GTINs assigned by suppliers, or consumer products that are not published by suppliers in catalogs (transactional option)	**I**	**I**	**R**
STEP 8. Have **government access product information from catalogs** and revise targeting algorithms to use information in assessing product jurisdiction and risk.	**I**	**R**	**I**
STEP 9. **Share list of inadmissible product GTINs with importers and carriers** for proactive product management	**A**	**R**	**I**

Figure 4: Steps and Responsibility Matrix for Implementation Actions

KEY ADOPTION POINTS FOR GOVERNMENT, INDUSTRY, AND GS1

Government, industry, and the global standards organization, GS1, that manages the e-commerce standards, all have key action items for advancing the use of e-commerce information at international borders. Those action items are:

For Government

☑ Create transactional capability for importers to provide GTIN, GPC, and UNSPSC codes as part of the entry submission.

☑ Integrate electronic global catalog subscription functionality into automated and/or examiner-reviewed PGA targeting systems.

☑ Collaborate with interested industry members to validate GPC and UNSPSC codes and attributes for cross-border utility.

For Industry

☑ Collaborate with government in reviews of GPC codes and attributes and UNSPSC codes.

☑ Publish international product classification code information for imported products in electronic catalogs for trading partner and government access

☑ Provide Global Trade Item Numbers for imported, consumer-ready products.[3]

☑ Provide international product classification codes for imported, unfinished products.

☑ Provide product information in advance of arrival whenever possible.

[3] The provision of GTIN product identification numbers is required under the catalog-based option and is optional under the transactions option, but its provision always adds value in that it allows PGAs to uniquely identify a specific product from a specific supplier and consider its previous jurisdiction and admission action for that specific product.

For GS1

☑ For those GS1 member organizations that have established a global electronic catalog service, support the no-cost publication of GPC codes and attributes and UNSPSC codes as a core service for their clients.

☑ Require information providers to update GPC brick numbers with values of "99999999" used as place holders in the early stages of catalog publication to brick numbers that accurately characterize products.

☑ Define the GPC Class code as an attribute for each GPC Brick code in the catalog data schema to aid catalog users in subscribing to all bricks of the same family. Unlike Class codes that are "intelligent" numbers, Brick code numbers are "unintelligent" and assigned without syntax. Presently, users wanting to locate product information for all products in a family must maintain a list of brick code numbers and validate the accuracy of that list after each code revision. Creating an attribute that specifies the class code of each brick code would allow users to locate all products in a family by specifying a single class code.

CAPTURING E-COMMERCE DATA IN IT SYSTEMS

To integrate e-commerce data into IT systems such as the US Automated Commercial Environment (ACE) IT system, record sets will need to include the GTIN as a unique product identifier and relate each GTIN to international product classification codes that characterize that product. To most effectively use this product information, government agencies will need to revise their business rules and targeting algorithms to use the values of these e-commerce data to set risk factors and recommend an admission action. The information below reviews the changes needed to capture e-commerce data into the entry submission. However, the exact business logic and algorithms used will be unique to each government agency and may incorporate business rules that are for internal use only. Therefore, the process for defining these rules is outside the scope of this discussion.

Capturing E-Commerce Product Information in the Entry

The following three data elements are those needed to capture transactional e-commerce data from importers or brokers. All elements are optional, and the provision of any one of these elements in a transaction will improve product identification and characterization. These data elements are the only ones needed to support both implementation scenarios – transactional use

where product classification codes are provided as part of the entry with or without a GTIN, and catalog-based use where the GTIN is provided to look-up product information in a catalog.

E-COMMERCE DATA ELEMENT DEFINITIONS

Fields for recording the following three data elements need to be designated in the ABI entry record set. Establishing a globally unique product identifier code data element in the ABI entry record is recommended to distinguish global product references from other non-global identification codes such as the Stock Keeping Unit (SKU) number.[4] The ITDS Standard Data Set (SDS) data model would need to be modified to create SDS element qualifiers for the two classification codes and an SDS globally unique product identifier element for the GTIN.

Data Element	Length/ Class	SDS Element Number	SDS Element Name (*=Proposed)	SDS Element Qualifier (*=Proposed)	Example	Description
GTIN	14N	1400	Globally Unique Product Identifier*	SRV	10614141543219	Enter the Global Trade Item Number (GTIN) as stated on invoice line. GTINs are globally unique product identification numbers managed by GS1, a non-profit supply chain standards organization.
GPC Brick Code	8N	2118	Commodity Type Code	GBR*	10005181	The Global Product Classification Brick Code that best classifies the product. Code set is maintained by GS1 and is available at www.gs1.org/gsmp/kc/gpc.
UNSPSC Commodity Code	8N	2118	Commodity Type Code	UCO*	49241604	The United Nations Standardized Product and Service Code that best classifies the product. Code set is maintained by the UNSPSC and is available at www.unspsc.org.

[4] Stock Keeping Unit numbers are often used by suppliers and buyers to designate products within the local context of their ordering and sales systems. They are not globally unique numbers and therefore do not have the same utility as GTINs or Universal Product Codes that are globally unique.

DATA ELEMENT ASSOCIATIONS:

The relationship of these three data elements to other physical or logical objects in the data model must be considered for full functionality. A high-level data relationship diagram of these e-commerce data elements in the entry record is provided below. The gray-shaded objects currently exist in the data model, and the orange-shaded objects would be those used to hold the e-commerce data provided by importers and brokers. For the notations outside each element box, a "1" means one, and only one, element must exist in that relationship; and a"1 . .*" means at least one element but two or more elements may exist in that relationship.

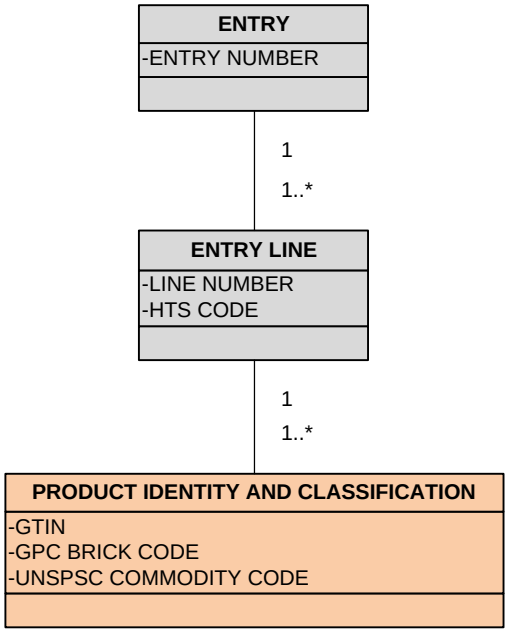

Figure 5: Data Relationship Diagram of Importer-Provided E-Commerce Data

Since current data models characterize products by their HTS number, the easiest way to extend product information is to identify products in the shipment that have that HTS number by their unique product identifier (GTIN). Product classification codes would

be associated with each GTIN to characterize that product. Since holds are applied on a line by line basis, importers may wish to limit each entry line to one GTIN so that low-risk products are not held along with high-risk products as they might be when both are included in the same entry line.

Capturing E-Commerce Data using Product Catalogs

Unlike the three data elements defined above, the e-commerce data available from electronic catalogs does not need to be reported in the entry process. This catalog data is not delivered by transactional record sets, but rather will exist in e-commerce data tables created when the government begins to subscribe to product information in a global catalog. The structure of these e-commerce data tables is defined by the product catalog maintenance organization and the data values in the government's tables can be synchronized daily with the industry-maintained global catalog.

Although electronic product catalogs are hosted by different companies across the globe, GS1 has created standards for a Global Data Synchronization Network (GDSN) that allows all catalogs to be interoperable. These standards define data structures and messages so that product information available in one GDSN-compliant catalog can be accessed by a user of any other GDSN-compliant catalog.

The high-level data model for the catalog-based use of e-commerce data is shown in Figure 6 below. The grey-shaded objects currently exist, the orange-shaded object would be used to hold the e-commerce data provided by the importer or broker in the entry submission, and the blue-shaded objects are created when the government establishes a connection with an electronic product catalog service. For the notations outside each element box, a "1" means one, and only one, element must exist in that relationship; a"1 . .*" means at least one element but two or more elements may exist in that relationship; and a "0 . . *" means that no elements are required but one or more may exist in that relationship.

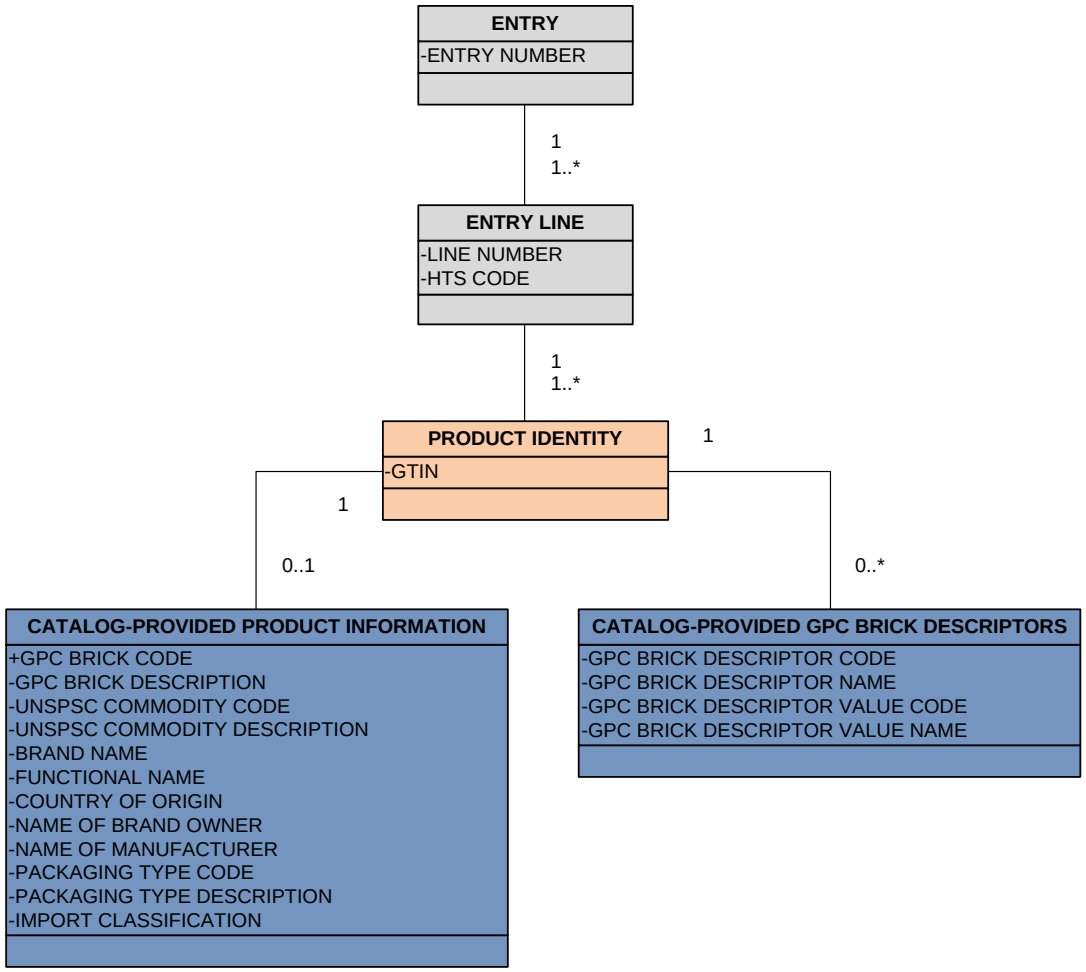

Figure 6: Logical E-Commerce Data Model Using the Catalog-Based Implementation

All of the e-commerce data, whether provided by the importer transactionally or from the electronic product catalog, can be handled by the government agencies with the same confidentiality and security as any other entry data.

MATURITY OF UNDERPINNING E-COMMERCE PROCESSES

The success that governments experience with the use of e-commerce data at borders will be influenced principally by the level of e-commerce adoption practiced by businesses in each product supply chain. Three foundational e-commerce practices that will impact this success are:

- 1) The degree to which GTINs are used by suppliers to identify imported products of interest to government;
- 2) The degree to which products of interest are published in global business to business (B2B) electronic catalogs; and
- 3) The degree to which specific data elements of interest to government are published in the global B2B electronic catalogs.

The potential for successful adoption of e-commerce data for product admission is best determined product set by product set, as supply chains differ in the level to which they have adopted these three foundational e-commerce practices. Adoption tends to be higher with suppliers that produce finished goods and consumer-ready goods compared to suppliers of products imported for further processing or assembly.

Five underpinning processes were examined for their use in general commerce, and their maturity was rated as Mature, Moderately Mature, or Least Mature.

MATURE PROCESSES	MODERATELY MATURE PROCESSES	LEAST MATURE PROCESSES
• Industry Use of GTINs to Identify Products	• Industry Use of Global Catalogs • Publication of Products in Global Catalogs • Publication of International Product Classification Codes in Catalogs	• Publication of GPC Brick Attributes in Global Catalogs

Industry Use of GTINs to Identify Products

Mature - About one-third to over one-half of all imported items are expected to have GTINs assigned by their suppliers

To estimate the extent to which products imported into the US are likely to be identified with GTINs, the product commodity categories used by the US Census Bureau were reviewed and assigned one of three ratings by Product Information Committee members familiar with supply chain adoption of electronic commerce. Categories were assigned a GTIN Use rating of either "COMMON," "POSSIBLE," or "UNLIKELY." The results of that rating process for each product set are shown in Appendix B.

The dollar value in millions for each commodity was determined by averaging annual totals reported by the Census Bureau for 2008 and 2009. The trading value for commodities in each of the three GTIN use categories was totaled to show that, by value, about 38 percent of US imports are expected to commonly use GTINs (typically finished products targeted for consumer sale), another 23 percent possibly use GTINs (typically products for further assembly), and 39 percent are not expected to use GTINs (typically raw materials).

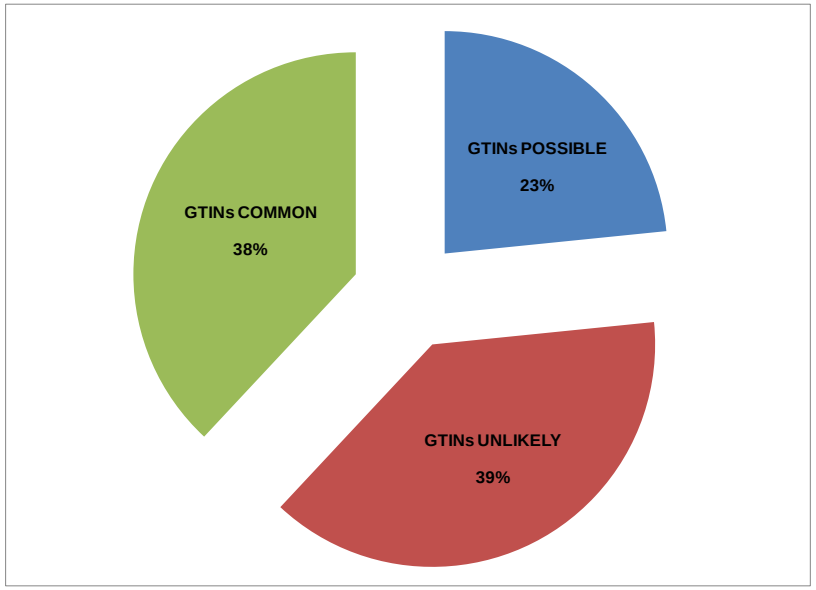

Figure 7: Percentage of Products for which GTIN use is expected to be either Common, Possible, or Unlikely

The results of this assessment suggest that GTIN use is common in the supply chain for approximately 4 out of 10 imported products. For product sets such as food, consumer electronics, household appliances, and pharmaceuticals, all products of high interest to PGAs, businesses have already adopted the foundational practice of identifying products with globally unique item references.

Industry Use of Global Catalogs

Moderately Mature - Over 24,000 companies around the world are using global electronic catalogs to synchronize product data

GS1 reports that as of June 2010 there are 23,700 supplier companies world-wide publishing trade item information into GDSN-compliant catalogs and about 360 retailers using the catalogs to synchronize their master product data. Trend-line data suggest that the number of companies using GDSN-compliant catalogs will increase by about 4,000 a year for the next several years. Figure 8 shows the upward trend line of companies adopting electronic catalog use world-wide since GDSN-compliant catalogs began operating in 2005.

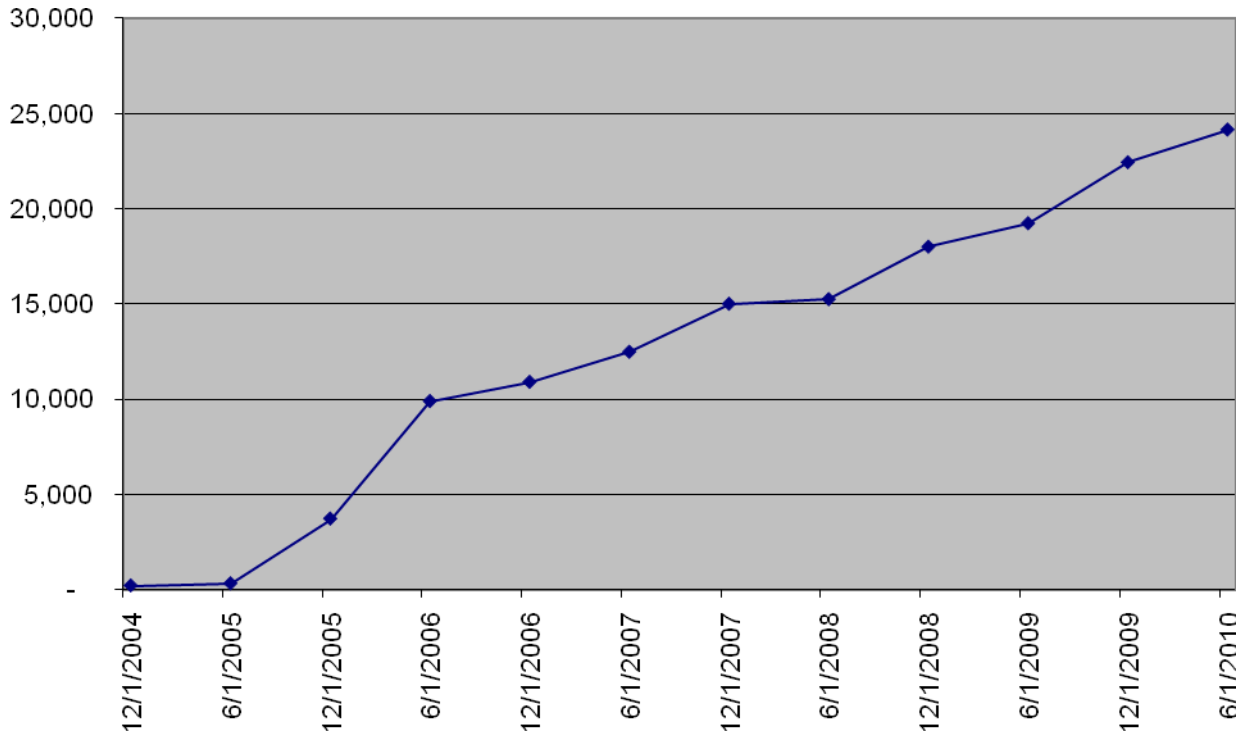

Figure 8: Companies using global electronic catalogs to publish product information

The synchronization of master product data in catalogs is endorsed by major company and trade associations around the world as a key element to effective Product Information Management. One of the more detailed business documents to make this case was a study titled "Action Plan to Accelerate Partner Trading Electronic Collaboration" published by the Grocery Manufacturers Association and the Food Marketing Institute in 2003. This study summarized synchronization benefits for the retail grocery supply chain to be in the range of $1 million additional earnings for every $1 billion of sales for manufacturers and in the range of $500,000 of additional earnings for every $1 billion of sales for retailers. Specific benefits included:

- Three to 5 percent reduction in shelf out-of-stocks;
- Two-week reduction in speed to market for new items;
- Five to 10 percent reduction in sales force and accounting time spent dealing with invoice disputes; and
- Elimination of basic item data errors, currently found in up to 8 percent of total purchase orders.

The benefits of global catalogs are not limited to the retail grocery supply chain, as a Case Study Report conducted by Capgemini for the Global Commerce Initiative reported in March 2005. In this report, companies such as Johnson & Johnson; Procter & Gamble Latin America; Gillette Venezuela; AEON, a leading Japanese retailer; and Unilever Columbia reported that the use of global product catalogs and data synchronization was reducing company costs, improving productivity, increasing sales, and providing the essential foundation for trading partner collaboration.

The key point for government is that companies are not expected to use global product catalogs to satisfy government interest in product information. Business value added by government use of e-commerce product data at international borders will simply add to the commercial return on investment that these companies already anticipate from more efficient supply chain management. Business efficiency will continue to drive global adoption of electronic catalogs independent of government's interest and use of product information in global catalogs.

Publication of Products in Global Catalogs

Moderately Mature - About 2.5 million unique trade items have been published, with about 1 million new products added every calendar year

As of June 2010, GS1 reported that about 5,622,000 GTINs had been published in GDSN-compliant electronic catalogs, also known as "data pools." In the first 6 months of calendar year 2010, about 1,240,000 new GTINs were added, suggesting conservatively that over 2 million new GTINs will be published in 2010. Because GTINs are used at the consumer, case, and pallet level, several GTINs are published (one for the case, typically one for the consumer item, and possibly one for the pallet) for each product published in a catalog. Therefore, assuming that in most cases a GTIN is published for at least the consumer item and the case, the total number of GTINs published has been divided by 2 to estimate the total number of unique trade items

represented in catalogs. Therefore, presently about 2.8 million unique trade items are published in catalogs, and the present trend suggests that about 500,000 new products will be added every year for the next few years.

Publication of International Product Classification Codes in Catalogs

Moderately Mature - About 2.25 million products, or eight out of 10, currently have a valid GPC code published

As of June, 2010, GDSN-compliant data pools reported that about 2.25 million of the 2.8 million published trade items had a valid Global Product Classification code value. This means that about 8 out of 10 published trade items in global catalogs are classified by a valid GPC brick.

The use of the GPC brick code is a required data element for all new trade items published into global catalogs. Therefore, over time, the percentage of products classified by a GPC code is expected to approach 100 percent.

However, some products presently use a place-holder number of "99999999," allowed when catalog publication first began and before all GPC codes were in place for all product sets. Eventually, suppliers will update these place-holder numbers to valid GPC brick numbers and all published trade items will then have a valid GPC code number. However, no sunset date has yet been set by GS1 for eliminating dummy GPC brick code numbers.

Publication of GPC Brick Attributes in Catalogs

Least Mature - Almost no products in global catalogs currently have GPC attribute brick attribute values published

Although most products have a valid GPC "brick" code published, almost none have values for the GPC brick attributes published. Out of 8,000 suppliers publishing product data to the GS1 US catalog, *only eight have published GPC brick attribute values for more than 50 products*. Of these eight companies, apparel and footwear manufacturers dominate those publishing GPC attribute information.

The reason for the extremely limited publication of GPC attribute values is that, although the publication of the GPC "brick" code is required in global catalogs, the publication of their GPC attribute values is optional. Furthermore, retailers are not driving

suppliers to populate the GPC attributes, as businesses are just beginning to discover the utility of the GPC attributes and building uses for this functionality into their corporate systems.

The publication of over 2.25 million trade items with valid GPC codes offers a workable starting point for PGAs. GPC product classification codes by themselves are useful in determinations of product jurisdiction. But without the publication of GPC attribute values, the PGA's ability to better manage product risk assessment will be limited. The PIC initiative will need to emphasize the importance of publishing GPC attribute values to all participating importers and suppliers.

Although the current lack of published GPC attribute values limits broad, immediate adoption of the catalog-based implementation, it does present an opportunity for industry and government to review and revise GPC codes and attributes before industry suppliers populate the GPC values. If industry and government work together to review and revise the GPC and UNSPSC code sets *before* suppliers populate values for their products, the GPC and UNSPSC will provide more useful and complete product information for making risk-based admission decisions. Adding and revising current classification codes before suppliers populate these values will mean less re-work and more complete and accurate product classification for industry and government later.

Once the GPC codes and attributes are defined, supplier entry is straightforward. An example of an entry screen used by suppliers to populate product information in a global catalog is shown in Figure 9. Each GPC attribute field on the screen offers the supplier a drop-down list of values and the supplier selects one value from the list that represents the characteristic of this product.

US companies that obtain their company prefix number through GS1 US can publish product classification information, including the GPC codes, attributes, and UNSPSC codes for all their products without becoming a member of an electronic catalog. Companies with GS1US-issued company prefixes are provided a product item management tool that assists the company in managing its GTIN issuance process and includes the capability of publishing product classification information for all issued GTINs.

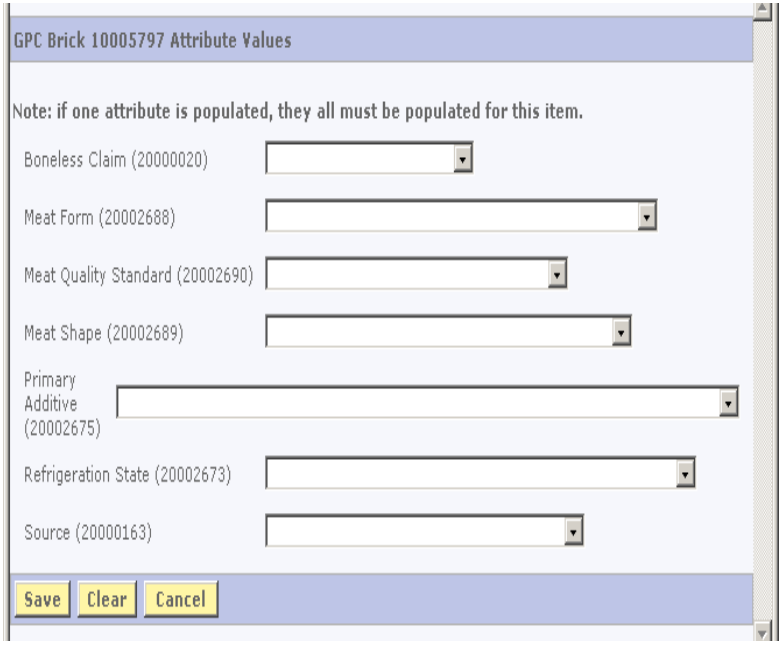

Figure 9: Sample Data Entry Screen Used by Suppliers to enter meat and poultry GPC brick attributes into an Electronic Catalog.

BACKGROUND:

Establishment of the Product Information Committee

ITDS Participating Government Agencies (PGAs) have long struggled to get a better understanding of the products moving in international commerce for several reasons. PGAs like the Department of Health and Human Services' Food and Drug Administration (FDA), the United States Department of Agriculture's Food Safety Inspection Service (FSIS), the Consumer Product Safety Commission (CPSC), and the Environmental Protection Agency (EPA) have a primary mission of protecting the public from unsafe or high risk products. Accordingly, each needs to make advance decisions about which products need review and what level of potential risk they present. For these PGAs and others, the absence of a globally unique product identification system and of structured, international product classification information has limited their ability to perform this mission.

Looking for a better solution, the ITDS Board of Directors created the Product Information Committee (PIC) in July 2008. Its mission – to advise the ITDS Board on a method that will supplement the HTS codes to more accurately characterize traded goods to support the efficient and effective review, release, and statistical analysis of internationally traded products.

PIC Initiative Objectives:

In April 2009 the Product Information Committee published a recommendation report that can be found at www.itds.gov. This report, "Leveraging e-Commerce Product Data for Smarter Cargo Management," suggested a new direction to improve the government's cargo clearance process by leveraging e-commerce standards and processes already in use across the business to business (B2B) supply chain.

The report's recommendations are summarized below. The committee's recommendation report recognizes that Harmonized Tariff Schedule (HTS) codes typically provide insufficient information about most products for accurate admissibility assessment. However, electronic commerce data used in B2B transactions provide a promising opportunity for government to gain visibility into the stream of internationally traded products crossing US borders. The April 2009 report recommendations represented the first steps towards a new strategy for managing products with a more granular level of identification and structured, internationally valid product characterization information.

April 2009 Product Information Committee Recommendations for Improving Cargo Management:

- Obtain the Global Trade Item Number (GTIN) of products in each shipment or, ideally, in each container, from importers in advance of product arrival;
- Use GTINs to obtain product characterization code and descriptive information from the GS1 Global Data Synchronization Network (GDSN);
- Use international product characterization codes (i.e., GS1 GPC, UNSPSC, and eCl@ss) from the GDSN to accurately determine jurisdiction and risk profile for each product by GTIN;
- Establish a "GTIN Prohibited Product List" that can be used by importers and shippers to know whether products are inadmissible before they are loaded for shipment; and

- Allow cost benefits to drive voluntary industry compliance with report recommendations in lieu of Federal regulation whenever possible.

Objectives NOT Related to the PIC Initiative:

In the April 2009 report, the PIC explains at length what the initiative is intended to accomplish – efficient product admission through the use of global product identification and classification numbers. The April report attempts to define what the initiative is, but the objectives of the PIC initiative can also be reinforced and clarified by a quick explanation of what the initiative is not.

- **PIC IS NOT a mandatory program.** Importers choose whether they will provide the additional product information used by the PIC initiative. Those that do will evaluate whether the benefits justify participation. Those that don't will continue to rely on the HTS codes and traditional product admission procedures[5].

- **PIC IS NOT a 100 percent solution to all cross-border product admission issues.** The PIC solution is targeted at higher-risk products that are consumer-ready and traded in an open, global supply chain. It does not work well for products imported for further processing or products imported in a "closed" company supply chain (e.g., products made, imported, and used or sold by the same company, such as components imported for assembly or cars imported to be sold by company dealers).

- **PIC IS NOT targeted at small, informal entries such as those typically transported by express carriers.** The PIC effort is targeted at formal Custom entries, those over $2000 in value, and would not apply to informal entries such as those covered under Section 321 of the Tariff Act of 1930, as amended (19 U.S.C. 1321).

- **PIC IS NOT a proposal that will impose a significant data entry burden on importers.** The optimal solution involves <u>one</u> additional data element, the GTIN, for each product in the shipment. All other product information would be supplier-published data that is downloaded from global product catalogs by the PGAs. In fact, with the catalog-based implementation option, the PIC approach may well involve <u>less</u> data being provided by importers.

[5] It is always possible that a PGA could mandate the provision of a specific product classification code through new agency regulation should this type of product information be particularly effective for that agency's jurisdictional and admission decisions. However, at this early stage of assessment, PGAs have expressed preferential support for voluntary adoption in accordance with business case value rather than mandatory adoption through rule-making action.

ACKNOWLEDGEMENTS

The ITDS Product Information Committee Chair gratefully acknowledges the following people for the knowledge they shared and the key contributions they made in the drafting of this guidance report.

Vincent Annunziato, CBP
Steve Arens, GS1 US
Lydia Berry, USDA-AMS
John Blachere, CPSC
Max Castillo, FDA
Roy Chaudet, EPA
Lance Esposito, GS1 US
Susan Dyszel, CBP
Sheila Einsweiler, FWS
Candace Funk, USDA-APHIS
David Giamporcaro, EPA
Roger Glasshoff, USDA-AMS
Jim Joholske, CPSC
Mike Kelly, USDA-FSIS
Sanjay Kirtikar, GS1 US
Teresa Martinez, USDA-APHIS
John Reich, Cataract, Inc.
Anne Rothrock, CBP
Michiko Shaw, USDA - AMS
Mary Stanley, USDA-FSIS
James Stevenson, IBM

Douglas Bailey, PIC Chair

APPENDICES:

Appendix A – LISTING OF ACRONYMS

Appendix B - GTIN USE IN IMPORTED COMMODITIES

Appendix B - GTIN USE IN IMPORTED COMMODITIES FEEDBACK ON PIC GUIDANCE REPORT

APPENDIX A – LISTING OF ACRONYMS

ACE ---------- Automated Commercial Environment
ATS ---------- Automated Targeting System
CAMIR ---------- Customs Automated Manifest Interface Requirements
CATAIR ---------- Customs and Trade Automated Interface Requirements
CBP ---------- Customs and Border Protection
CPSC ---------- Consumer Product Safety Commission
EDI ---------- Electronic Data Interchange
DHS ---------- Department of Homeland Security
DMO ---------- Dictionary Maintenance Organization
DOD ---------- Department of Defense
EPA ---------- Environmental Protection Agency
FWS ---------- U.S. Fish and Wildlife Service
HTS ---------- Harmonized Tariff Schedule
GDSN ---------- Global Data Synchronization Network
GPC ---------- Global Product Classification
GTIN ---------- Global Trade Item Number
ISO ---------- International Standards Organization
ITDS ---------- International Trade Data System
PGA ---------- Participating Government Agency
PIC ---------- Product Information Committee
SKU ---------- Stock Keeping Unit
UN/CEFACT ----- United Nations Centre for Trade Facilitation and Electronic Business
UNSPSC ---------- United Nations Standard Products and Services Code
UPC ---------- Universal Product Code
USDA ---------- United States Department of Agriculture
USDA-AMS ------ USDA Agricultural Marketing Service
USDA-APHIS ---- USDA Animal and Plant Health Inspection Service
USDA-FSIS ------- USDA Food Safety Inspection Service
WCO ---------- World Customs Organization

APPENDIX B - GTIN USE IN IMPORTED COMMODITIES

PRODUCTS COMMONLY MARKED WITH GTINS

Product Set	2-Yr Average (Million $)	Use of GTINs
Alcoholic beverages, excluding wine	5,267	COMMON
Apparel, household goods - cotton	46,712	COMMON
Apparel, household goods - wool	3,232	COMMON
Apparel, textiles, nonwool or cotton	28,661	COMMON
Apparel, household goods-nontextile	7,505	COMMON
Bakery products	6,405	COMMON
Blank tapes, audio & visual	1,566	COMMON
Books, printed matter	3,993	COMMON
Business machines and equipment	4,737	COMMON
Camping apparel and gear	7,224	COMMON
Computer accessories	56,682	COMMON
Computers	40,714	COMMON
Cookware, cutlery, tools	6,270	COMMON
Finished textile supplies	3,272	COMMON
Footwear	14,738	COMMON
Glassware, chinaware	1,910	COMMON
Household appliances	18,126	COMMON
Meat products	6,901	COMMON
Medicinal equipment	25,432	COMMON
Motorcycles and parts	3,313	COMMON
Musical instruments	1,501	COMMON
Other household goods	60,936	COMMON

Paper and paper products	6,857	COMMON
Pharmaceutical preparations	80,197	COMMON
Photo equipment	6,334	COMMON
Records, tapes, and disks	2,785	COMMON
Stereo equipment, etc	5,763	COMMON
Tea, spices, etc.	1,242	COMMON
Telecommunications equipment	41,031	COMMON
Toiletries and cosmetics	6,395	COMMON
Toys, games, and sporting goods	33,683	COMMON
TV's, VCR's, etc.	38,545	COMMON
Wine, beer, and related products	7,915	COMMON
Writing and art supplies	12,484	COMMON
TOTAL VALUE OF PRODUCTS COMMONLY MARKED WITH GTINs	598,318	

PRODUCTS POSSIBLY MARKED WITH GTINS

Product Set	2-Yr Average (Million $)	Use of GTINs
Chemicals-fertilizers	11,602	POSSIBLE
Chemicals-inorganic	6,501	POSSIBLE
Chemicals-organic	19,420	POSSIBLE
Dairy products and eggs	1,551	POSSIBLE
Electric apparatus	31,558	POSSIBLE
Finished metal shapes	14,949	POSSIBLE
Fuel oil	33,824	POSSIBLE
Furniture, household goods, etc.	21,316	POSSIBLE
Generators, accessories	18,832	POSSIBLE
Industrial machines, other	32,741	POSSIBLE

Industrial supplies, other	21,585	POSSIBLE
Jewelry	9,991	POSSIBLE
Laboratory testing instruments	4,024	POSSIBLE
Measuring, testing, control instruments	13,192	POSSIBLE
Nontextile floor tiles	2,230	POSSIBLE
Nuts	1,349	POSSIBLE
Parts-civilian aircraft	8,842	POSSIBLE
Petroleum products, other	40,550	POSSIBLE
Plastic materials	11,259	POSSIBLE
Plywood and veneers	2,033	POSSIBLE
Pulpwood and woodpulp	3,229	POSSIBLE
Rugs	1,704	POSSIBLE
Semiconductors	23,491	POSSIBLE
Shingles, wallboard	7,166	POSSIBLE
Synthetic cloth	4,718	POSSIBLE
Textile, sewing machines	1,273	POSSIBLE
Tobacco, waxes, etc.	6,045	POSSIBLE
Vegetables	7,631	POSSIBLE
Wood, glass, plastic	5,156	POSSIBLE
TOTAL VALUE OF PRODUCTS POSSIBLY MARKED WITH GTINs	367,756	

PRODUCTS UNLIKELY TO BE MARKED WITH GTINS

Product Set	2-Yr Average (Million $)	Use of GTINs
Agricultural machinery, equipment	6,554	UNLIKELY
Artwork, antiques, stamps, etc.	8,013	UNLIKELY
Bauxite and aluminum	10,687	UNLIKELY
Cane and beet sugar	1,146	UNLIKELY
Chemicals-other	8,314	UNLIKELY
Civilian aircraft	10,844	UNLIKELY
Coal and related fuels	3,426	UNLIKELY
Cocoa beans	1,029	UNLIKELY
Commercial vessels, other	90	UNLIKELY
Copper	5,331	UNLIKELY
Cotton cloth, fabrics	1,105	UNLIKELY
Cotton, natural fibers	69	UNLIKELY
Crude oil	265,242	UNLIKELY
Drilling & oilfield equipment	9,683	UNLIKELY
Electric energy	2,858	UNLIKELY
Engines-civilian aircraft	13,194	UNLIKELY
Excavating machinery	6,182	UNLIKELY
Farming materials, livestock	1,180	UNLIKELY
Feedstuff and foodgrains	4,102	UNLIKELY
Fish and shellfish	13,516	UNLIKELY
Food oils, oilseeds	4,572	UNLIKELY
Food, tobacco machinery	2,357	UNLIKELY
Fruits, frozen juices	9,626	UNLIKELY
Gas-natural	24,624	UNLIKELY

Gem diamonds	16,241	UNLIKELY
Gem stones, other	2,536	UNLIKELY
Glass-plate, sheet, etc.	1,005	UNLIKELY
Green coffee	3,590	UNLIKELY
Hair, waste materials	683	UNLIKELY
Hides and skins	136	UNLIKELY
Industrial engines	15,961	UNLIKELY
Iron and steel mill products	15,199	UNLIKELY
Iron and steel products, n.e.c.	8,218	UNLIKELY
Iron and steel, advanced	6,844	UNLIKELY
Leather and furs	563	UNLIKELY
Liquefied petroleum gases	13,794	UNLIKELY
Lumber	3,661	UNLIKELY
Marine engines, parts	882	UNLIKELY
Materials handling equipment	10,029	UNLIKELY
Materials, excluding chemicals	1,227	UNLIKELY
Metalworking machine tools	7,639	UNLIKELY
Natural rubber	2,065	UNLIKELY
Newsprint	1,904	UNLIKELY
Nickel	2,511	UNLIKELY
Nonagricultural foods, etc.	693	UNLIKELY
Nonfarm tractors and parts	1,278	UNLIKELY
Nonferrous metals, other	3,369	UNLIKELY
Nonmonetary gold	7,453	UNLIKELY
Nuclear fuel materials	5,724	UNLIKELY
Numismatic coins	1,522	UNLIKELY
Nursery stock, etc.	1,411	UNLIKELY
Other foods	8,759	UNLIKELY
Other precious metals	8,623	UNLIKELY

Photo, service industry machinery	12,800	UNLIKELY
Pleasure boats and motors	1,997	UNLIKELY
Pulp and paper machinery	4,108	UNLIKELY
Railway transportation equipment	1,395	UNLIKELY
Spacecraft, excluding military	54	UNLIKELY
Specialized mining	762	UNLIKELY
Steelmaking materials	7,312	UNLIKELY
Stone, sand, cement, etc.	4,338	UNLIKELY
Sulfur, nonmetallic minerals	1,279	UNLIKELY
Synthetic rubber--primary	1,977	UNLIKELY
Tin	622	UNLIKELY
Vessels, except scrap	2	UNLIKELY
Wool, silk, etc.	689	UNLIKELY
Zinc	1,470	UNLIKELY
TOTAL VALUE OF PRODUCTS UNLIKELY TO BE MARKED WITH GTINs	606,053	

Source: US Census Bureau, "FT900 U.S. International Trade in Goods and Services, December 2009, Exhibit 8", US Census Bureau, http://www.census.gov/foreign-trade/Press-Release/2009pr/12/

APPENDIX C – SUMMARY OF TRADE FEEDBACK ON PIC GUIDANCE REPORT

1) **Comment:** E-commerce data is not available and/or widely used in certain industry segments. It would therefore require a significant investment from the private sector to accommodate this process.

   Response: The proposal recognizes this business reality. There is no plan to mandate the use of e-commerce data across all industry segments. The process will only be used where there is existing commercial use of such information.

2) **Comment:** In certain industry segments, e-commerce data is already being provided through agency-specific product codes.

   Response: The proposal recommends moving away from codes that are agency specific to identifiers that have broad, commercial use. It is recognized that any such transition will require substantial preparation and coordination.

3) **Comment:** Those importers who do not voluntarily use e-commerce data could be relegated to second-class status. That is, preferential treatment could be provided to those importers that voluntarily provide the data. There should be no penalty to those companies that do not voluntarily participate.

   Response: The use of e-commerce data will benefit all importers. It will allow limited government resources to focus their attention on higher risk commodities and more quickly release those shipments that are of no concern.

4) **Comment:** While the current proposal states that the use of e-commerce data is voluntary and not intended for use in those industry segments where such information is not commonly used, there is a concern that over time government agencies will require the submission of such data.

   Response: It is not the intention of the government to require the submission of e-commerce data. Any future proposal to mandate the submission of this data would likely be accomplished through the Federal rulemaking process, allowing the

private sector ample time to voice concerns. The PIC team is committed to continuing a robust dialog with the private sector and providing complete transparency.

5) **Comment:** The implementation of e-commerce data will be a challenge for importers in general, require new systems and databases, and the acquisition of expertise to classify items under the new product code schemes. It is more complex than the implementation of the Lacey Act and the Importer Security Filing (ISF).

   Response: The PIC team acknowledges that the implementation of these product codes as additional identifiers for imported goods will require system changes. The PIC team is conducting three pilot tests on toys, meat products and cut flowers to ascertain the specific benefits of using e-commerce data. It is hoped that the effort to implement these codes will be worth the effort.

6) **Comment:** Unlike the Harmonized Tariff Code, e-commerce data is not maintained by the US government. How will the government address situations where the wrong information is provided by importers or their representatives? Doesn't the government need to control or regulate the content of the product code dictionaries?

   Response: Going forward it will be critical for the private sector and the government to work together to ensure that, if implemented, the usage of e-commerce data will result in positive outcomes for both.

7) **Comment:** The use of e-commerce data will provide benefits. Specifically, importers can work with their vendors to ensure that the right product identification number is used throughout the supply chain and across government agencies – eliminating the need for technical descriptive information. Further, the current tariff system does not allow specificity in certain areas resulting in the delay of shipment release while more information is provided. E-commerce could help mitigate these situations.

   Response: The PIC team hopes to validate these suggested benefits through the planned pilot tests.

8) **Comment:** Agencies should conduct thorough reviews of the information they desire to collect to ensure needs are met for safety and welfare, not merely for statistical gathering.

   Response: The purpose of the proposed pilot tests shares this focus -- to determine the value of e-commerce data for risk assessment and product admission efficiency.

9) **Comment:** A phased in implementation approach should be used, not just by industry but also by agencies.

   Response: The PIC team will continue to work with industry when/if the time comes to implement the collection of e-commerce data. Adoption would be expected to take place over time in accordance with the interest of specific product supply chains and government agencies to capture the potential benefit of a more efficient product admission process.

10) **Comment:** Agencies should identify the benefits that will accrue to traders who supply e-commerce data.

    Response: The PIC team believes the more efficient risk assessments that should result from the use of e-commerce data will provide faster clearances where appropriate.

11) **Comment:** Agencies should also consider the use of commercial identifiers for entity identification – DUNS numbers.

    Response: The PIC team did not explore concepts related to party identification, given the committee's product information focus, but the ITDS Board is actively pursuing the use of commercial identifiers for parties engaged in international trade.

12) **Comment:** Consideration should be given to the expansion of the Harmonized Tariff numbers to 12 digits which would allow for greater specificity.

    Response: The PIC team believes that there is greater benefit to be obtained from using existing commercial identifiers that are already in use today rather than undertaking a massive overhaul of the Harmonized Tariff System.

13) **Comment:** It is not clear from the implementation guide how e-commerce data would assist federal agencies to make admissibility determinations based on risk.

    Response: The PIC team is conducting pilot tests for this very purpose – to determine the value of applying e-commerce data to real world transactions.

14) **Comment:** The government should evaluate all available product code dictionaries and not encourage the private sector to use one dictionary. The US government should set the technical standards and allow for comments in the Federal Register. Dictionaries maintained by the UN and the WCO should be given equal consideration

    Response: The government is committed to using global industry standards in lieu of government-specific standards to minimize compliance burdens on industry. Any existing global product dictionary could be used by importers. Government would work with industry supply chains to recommend specific dictionaries only when the use of those dictionaries clearly results in a more efficient admission process.

15) **Comment:** All costs of adopting a dictionary (license fees, royalties, software, hardware and systems requirements) should be disclosed by the ITDS Board of Directors before a product code standard is accepted by the US government.

Response: The intellectual property of all dictionaries proposed for use will be in the common domain and royalty-free. Any maintenance or other associated access fees should be identified by the agencies responsible for collecting the e-commerce data.

16) **Comment:** Without the deployment of ACE Cargo Release, private sector engagement in PIC is not a good return on investment.

Response: We agree that it is through automated cargo release functionality that the greatest potential benefits should be realized. The pilot tests are intended to test this premise.

17) **Comment:** Perhaps a voluntary program could be established to test the use of e-commerce data in areas where tariff definitions do not meet the needs of PGAs.

Response: The PIC team agrees and pilot tests are in process.