



GS1 Trusted Source of Data

Document Summary

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1.	14 March 2012	Cameron Green	First Draft
2.	20 March 2012	Cameron Green	Updates from internal review
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Note on branding and seal

Specific branding and seal guidelines mentioned throughout this report will be provided separately to implementing aggregators by end 2012. Please keep this in mind as you see specific references to it in the Project Report.

Note on local aggregation services

The B2C Information Needs Group (BING) will develop a detailed set of compliance procedures to ensure that local aggregation services operate appropriately. These procedures will be used to certify local aggregation services in once global interoperability standards are complete in January 2013. The BING will also develop a full operations manual based on this report.

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This is a final draft version of this document and is subject to legal review.



Table of Contents

1.	Executive Summary4			
2.	Background5			
3.	Implementation Plan6			
4.	Technical Framework7			
5. Business Participation			9	
	5.1.	Brand-owners	10	
	5.2.	GDSN-certified data pools		
	5.3.	Brand-authorised 3 rd party content providers		
	5.4.	Data aggregators		
	5.5.	Internet Application Providers		
	5.6.	GS1 Global Office		
	5.7.	GS1 Member Organisations	16	
6.	Data	Management	17	
	6.1.	B2C Data Quality		
	6.2.	Data Authenticity		
	6.3.	Data Integrity	23	
	6.4.	Data Liability	24	
7.	Арре	endix: Reference Information	26	



1. Executive Summary

1.1. What is this report?

This report provides an update on the GS1 Trusted Source of Data (TSD) project including:

- Operational model and guidance on stakeholder participation
- Considerations for effective data management
- Strategic next steps to deploy the GS1 Trusted Source of Data framework

1.2. Why this report?

Following a successful proof of concept and pilot in 2011, the GS1 B2C Project Board requested a report that would help move the project into a live deployment phase. It wanted clear responses to the following questions:

- What do brand-owners need to do to share their product data?
- What organisations can act as data aggregators?
- Under what conditions can internet application providers use product data provided by brand-owners to data aggregators?

When approved, this report will form the basis of a local implementation manual that can be used by GS1 Member Organisations to deploy the GS1 Trusted Source of Data framework to all local stakeholders.

1.3. Next steps

- April 2012 Dec 2012: Global interoperability standards development
- April 2012: Local implementation manual
- April 2012 onwards: Local data aggregators established
- June 2012: Consumer Goods Forum Board call to action for provision of brand-owner product data
- **December 2012:** Global interoperability standards for data aggregators
- January 2013: Global implementation manual
- **January 2013**: Globally interoperable GS1 Trusted Source of Data framework available to begin implementation

2. Background

2.1. Objective

GS1 aims to create the Trusted Source of Data (TSD) framework to support the communication of authentic and accurate product data by brand-owners to consumers/shoppers, retailers, internet application providers, and government using internet and mobile devices.

The vision of the GS1 Trusted Source of Data project is that:

- Brand-owners (and retailers with private label products) can share relevant product information easily, thus building trust with consumers.
- Internet application providers can ensure they are delivering authentic data.
- Consumers can feel confident that the digital product information they access is accurate, no matter how or where they engage with products.

The GS1/CapGemini Report "Beyond the Label: Providing Digital Information Consumers Can Trust" provides a full analysis of the strategy value of digital product information. The report is available at www.gs1.org/b2c.

Note: All parties should consider business models that stimulate adoption of the TSD Framework.

2.2. Scope

The GS1 Trusted Source of Data framework is only of value if it is used by a significant number of brand-owners and internet application providers. In order to achieve appropriate scale, Phase 1 of the project is limited to 6 core attributes and 19 nutritional attributes (listed in section 7.6) for the pre-packaged food and beverage products.



3. Implementation Plan

The diagram below shows the implementation plan for GS1 Trusted Source of Data (TSD). There are essentially two distinct phases of deployment:

1. April – December 2012: Local deployment

- Local data aggregators established following criteria in section 5.4
- Brand-owners populate data in one or many local data aggregators
- Internet application providers access data from one or many local data aggregators

2. January 2013 onwards

Thanks to global standards and certification procedures currently being developed, local aggregators will become globally interoperable. The global standards will cover the data model and local aggregator connectivity. As a result:

- Brand-owners only need to populate data in one local aggregator for it to be accessible globally
- Internet application providers only need to connect to one local aggregator to access brand-owner data



4. Technical Framework

Between, July and December 2011, GS1 organised a global pilot to perform a robust test of a proof-of-concept system developed in June 2011. More than 30 brand-owners in 8 countries provided information on over 900 products that was used by five internet application providers in their mobile applications. The architecture framework shown below is a result of learnings from the pilot.



The framework shows how a decentralised network can enable product data supplied by brandowners and coming from both GDSN and non-GDSN sources to reach consumer-facing applications. It also shows that whilst business relationships between brand-owners, 3rd party content providers and internet application providers happen at the local level, product data is globally available.

In the framework, internet application providers will interface with data aggregators to obtain data regarding products identified with the GS1 Global Trade Item Number (GTIN). Each data aggregator may draw upon a variety of sources for this data authorised by brand-owners, including the GS1 Global Data Synchronization Network (GDSN).

Since no single local data aggregator will have data for all products, local data aggregators will be federated by means of a global index to be defined via standards development. The index will indicate which data aggregators have data about which GTINs, allowing each data aggregator to efficiently access missing product records from peer data aggregators.

For this framework to become a reality, a set of standards are being developed to enable data aggregators to be able to exchange product data.



4.1. Local Implementation Architecture (April – December 2012)

With this report, local data aggregators will start to be established. Brand-owners that decide to provision data into these local data aggregators should conform to the rules described here and may use data already populated in a GDSN-certified data pool (all data aggregators must be recipients of a GDSN-certified data pool), a brand-authorised 3rd party content provider or use the data aggregator's own interface per the architecture shown in the diagram below.

As there is no standard Application Programming Interface (API) defined for application providers at this phase of the project, internet application providers must follow the protocol designed by each data aggregator for access. A standard API can be proposed as part of a later phase of standards development.

The diagram below shows the framework that will be in use until January 2013.



6 Receive attributes from aggregator



5. **Business Participation**

This section covers roles, responsibilities, rules and guidance for the following stakeholders to participate in the GS1 Trusted Source of Data:

- Brand-owners
- GDSN-certified data pools
- Brand-authorised 3rd party content providers
- Data aggregators
- Internet application providers
- GS1 Global Office
- GS1 Member Organisations

5.1. Brand-owners

Brand-owners include both manufacturers and retailers with private label products. Both can benefit from sharing their product information with consumers in the digital world. They are responsible for providing the product data to be used by internet application providers.

Scope

For Phase 1 of this project the focus is on populating product information for pre-packaged food and beverage products

- Brand-owners SHOULD provide product data for the 6 core attributes and 19 nutritional attributes as listed in section 7.6 as applicable for the target market(s) where the products are sold
- Brand-owners MAY be required to provide additional product data for certain target markets to comply with local regulations.
- Population of other product types and attributes will be optional and part of the long-term value of the GS1 Trusted Source of Data, but not the immediate focus of Phase 1.

Options for providing data to the GS1 TSD Framework

There are 4 options for brand-owners to provide data:

- 1. Publish product data to a data aggregator from a GDSN-certified data pool
- 2. Publish product data to a data aggregator, either by uploading the product data using a web portal or by publishing from within its enterprise system using a number of data exchange options that may be provided by the Data Aggregator (EDI, Flat file, Excel, XML, etc.)
- 3. Authorise a 3rd party content providers to provide product data to the Data Aggregator on its behalf.
- 4. Set up a dedicated data aggregation service. This method has limited value until the globally interoperable TSD framework is available in January 2013.

Deciding whether to use GDSN

- If a brand-owner is already subscribed to GDSN, they SHOULD leverage their existing investment and publish data to one or more Data Aggregators using GDSN considering the target markets where their products are sold.
- If a brand-owner is not subscribed to GDSN, but they trade with companies in GDSN, it is recommended to subscribe to GDSN to ensure consistency of B2B and B2C data across all trading partners.

Implementation guidance for brand-owners using GDSN

Brand-owners who decide to use GDSN to provide product data to the GS1 Trusted Source of Data framework SHOULD include the following attributes:

- For product master data, all mandatory attributes from the GDSN Catalogue Item Notification (CIN) Business Message Standard (BMS) and additional basic product attributes as required for Phase 1.
- For nutritional Information, all applicable Phase 1 attributes (as determined for the prepackaged food and beverage products in the target market by the brand-owner) from the GDSN Food & Beverage Extension.
- Guidance on populating the Phase 1 attributes in GDSN can be found in section 0.
- It is encouraged that additional non-mandatory attributes should also be provided if available.
- □ The hosting of images is up to the brand. Size of image and other performance criteria should be kept in mind as this content will be used on mobile devices in some case

Rules for brand-owners

- SHOULD have a relationship with a GS1 Member Organisation to get have a GS1 Global Company Prefix to manage their product information.
- MUST have an agreement with one or more B2C data aggregators.
- Brand-owners MUST provide authorisation to its B2C Data Aggregator to make the data available to data aggregators within the TSD Framework (and so to IAPs using product data provided by data aggregators). This will normally be part of the contract the brandowner signs with the data aggregator.

If using GDSN,

- Brand-owners MUST authorize GDSN Source Data Pool (SDP) for sharing of B2C Phase 1 data with its B2C Data Aggregator.
- Brand-owners SHOULD comply with the GDSN Data Quality Framework for complete and accurate product information.



5.2. GDSN-certified data pools

The Global Data Synchronisation Network (GDSN) is built around the GS1 Global Registry®, GDSN-certified data pools, the GS1 Data Quality Framework and GS1 Global Product Classification (GPC), which when combined provide a powerful environment for secure and continuous synchronisation of accurate data. Since many brand-owners are already leveraging GDSN Source Data Pools, these are an effective way to provide readily available B2C product data to a data aggregator.

Note: The following are rules for GDSN-certified data pools that choose to support the GS1 Trusted Source of Data. Support of GS1 Trusted Source of Data is <u>not</u> a requirement to be a GDSN-certified data pool.

Role of GDSN-certified data pools

- Allow brand-owners to publish product data to one or more data aggregators
- Ensure product data is provided in the standard format
- Ensure product data can be synchronised with any other data aggregator via the GDSN

Rules for GDSN-certified data pools

- GDSN-certified data pools SHOULD either develop a data aggregator or reach an agreement to use other data aggregators for providing product data.
- GDSN-certified data pools MUST provide the product data for GTINs authorised by brandowners to its chosen data aggregator(s).
- Authorisation in the TSD framework is based on explicit permission to share product data externally outside the GDSN network to IAPs and does not have to rely on the GDSN pub/sub mechanism. It is assumed that predominantly the GDSN pub/sub mechanism will be used to publish product data to the chosen/authorized data aggregator using the data aggregators Global Location Number (GLN).

Note: How product data is communicated and managed between the GDSN-certified data pool and its chosen data aggregator is implementation specific and out of scope for the local implementation phase.



5.3. Brand-authorised 3rd party content providers

Brand-authorised 3rd party content providers are entities such as marketing agencies, GS1 Member Organisations providing product catalogue services, private label manufacturers, etc. that are authorized by the brand-owners to provide digital product information into the GS1 Trusted Source of Data framework.

Role of brand-authorised 3rd party content providers

- Enable brand-owners to publish product information to B2C Data Aggregators.
- Enable brand-owners to maintain the control of product data within the TSD Framework via an authorisation process
- Ensure the integrity of the data from brand-owner
- Maintain service level agreements and brand-owner contracts
- Conduct real-time refreshing or synchronisation of product data with data aggregators

Rules for brand-authorised 3rd party content providers

- MUST have authorisation from a brand-owner to provide product information to a B2C data aggregator
- MUST maintain the currency of the product data with the brand-owner
- MUST synchronise updates with the B2C data aggregators



5.4. Data aggregators

Data aggregators are a critical component of the TSD framework. They facilitate the registration and dissemination of B2C Phase 1 data on behalf of brand-owners to internet application providers (IAPs). Additionally, they can supplement GDSN data with non-GDSN data to better serve IAPs.

Role of data aggregator

- Provides access to product data for internet application providers (including retailers with consumer facing applications)
- Provides flexible methods (e.g. manual / web, file based or machine-to-machine) to import brand-authorized product data into the aggregator
- Aggregates product data from additional data sources to serve local information needs
- Ensures data integrity on aggregated product data
- Provides analytics and usage information

Some general rules regarding the provision of Trusted Source of Data (TSD) aggregation services are:

Rules for local implementation

B2C TSD data aggregators:

- SHALL freely share data with other B2C TSD Data Aggregators to enable global interoperability
- SHALL be recipients of a GDSN-certified data pool.
- SHALL maintain a universal opt-in for brand-owners authorizing sharing of B2C product information with all connected IAPs
- SHALL be able to stop publication of brand-authorised data on request from the brandowner with immediate effect
- SHALL provide product data to IAPs within reasonable performance times (considering current consumer applications)
- SHALL provide access to product data to connected IAPs in compliance with the terms of use (i.e. proper implementation of the TSD seal described in section 6.2.1)
- MUST declare data aggregation services with GS1 Global Office
- SHALL ensure the provider of the information has been authorised by the brand-owner prior to provisioning information to IAPs
- SHALL preserve the security (e.g. data transmission, sharing with approved parties, encryption) and integrity (i.e. the data passes unchanged) of the product data provided by the brand-owner
- MAY use additional brand-authorised 3rd party content providers to provide and/or supplement B2C data either not available or not provided in GDSN
- SHALL comply with global and local regulations
- MAY provide their aggregation services to a number of GDSN-certified data pools.
- MAY optionally supplement brand-authorised product information with additional product information to cater to needs of the local market and in that case SHALL clearly indicate to IAPs what product information is brand-authorised versus supplemental. In case of dispute, GS1 Global Office SHALL rule on what constitutes a "clear indication".
- MUST provide GS1 Global Office with list of all IAPs connecting to the TSD Framework to enable brand-owners to police TSD seal usage
- MUST supply the TSD Seal auditing process of IAPs to any Brands who plan to provision product data. NOTE: At this stage the auditing process is not globally maintained (i.e. definition and execution is the responsibility of each data aggregator).
- MUST process product data updates from brand-owners to take effect immediately.



5.5. Internet Application Providers

An internet application provider (IAP) is any company developing consumer facing applications (in some cases this may be a retailer for example). Any consumer-facing applications using data from the TSD Framework have to fulfil at least the rules listed below. There may be additional rules to fulfil according to specific market requirements introduced by the responsible data aggregator.

Rules

- IAPs SHALL have a business relationship with the data aggregator where they are providing consumer-facing applications.
- IAPs SHALL guarantee that actual product data is shown to consumers within a reasonable time of response.
- IAPs SHALL display authentic product data to consumers in compliance with rules for TSD seal usage (such as providing the source of the trusted data).
- IAPs SHALL NOT display supplemental information (not from TSD) using the TSD Seal.
- IAPs SHALL query the data aggregator for each consumer information request and may not cache product data to guarantee the freshness of data.
- IAPs MAY cache product data for indexing or search purposes up to a maximum of 24 hours.
- IAPs SHALL preserve the data integrity of the product data from its source to its delivery to mobile applications and its presentation to the consumer.
- IAPs SHALL NOT share the received product data with other IAPs or mobile channels. This is to protect the data integrity and freshness of the product data.

5.6. GS1 Global Office

Roles

- GS1 Global Office will maintain the GS1 Trusted Source of Data brand and its integrity by ensuring that its usage is consistent with the Industry agreed upon rules for use. This also applies to the rules for use of the TSD Seal.
- GS1 Global Office will manage all standards development and TSD framework deployments including any future certification required by TSD framework stakeholders.
- GS1 Global Office will manage the operational rules and guidelines for the TSD framework.
- GS1 Global Office will maintain the list of data aggregators and IAPs conforming to the rules for Local Implementation as stated in this manual.
- GS1 Global Office will engage in the auditing of data aggregators and IAPs. Specifically, any report of misuse will be investigated and acted upon by GS1 Global Office.

5.7. GS1 Member Organisations

Roles and responsibilities

The commitments listed below are agreed between the GS1 Member Organisations participating in the GS1 Trusted Source of Data framework. There may be additional commitments according to specific market requirements introduced by the responsible GS1 Member Organisation.

- Enable brand-owners to find capabilities for brand provisioning of B2C product data. This
 means at a minimum pointing brand owners to the TSD compliant data aggregation
 services available on the GS1 Global Website).
- Ensure brand-owners populating product data are the true owners of the products (confirm whether or not the entity populating the data has a license to use the GTINs associated with the products).
- Promote and educate stakeholders on the GS1 B2C TSD Framework



6. Data Management

As product data flows from brand-owners to consumers through the GS1 Trusted Source of Data framework the following principles need to be respected:

- **Data Quality**: Brand-owners are responsible for making sure the product data they provide is error-free
- **Data Authenticity**: Mechanisms are available to show that data coming from the GS1 Trusted Source of Data framework is from the brand-authorised.
- **Data Integrity**: Each stakeholder that handles the data provided by the brand-owner is responsible that it is not modified in any way as is moved through the system
- **Data Liability**: Brand-owners are ultimately responsible for the product data in the TSD framework provided that the other stakeholders do not modify that data.

This section examines these principles in more detail and gives concrete advice about how to optimise data management in the initial stages of this project.



6.1. B2C Data Quality

One of the goals of the GS1 Trusted Source of Data Pilot was to demonstrate the efficient transmission of information from a data source (provider/owner) to a data user (consumer). To test that transfer, a data set of basic and nutritional attributes was chosen for pilot, supporting three criteria:

- required by the consumer,
- available from the brand-owner, and
- communicable via GDSN

Results detailed in the Trusted Source of Data Pilot Report uncovered the need for higher quality data in the basic and nutritional attributes from the data set.

For B2C, the consumer will decide whether or not the information coming from the Trusted Source of Data Framework meets their needs (is of high quality) or does not (is incomplete, inaccurate, or not understandable).

Data Quality (DQ) is defined as a perception or an assessment of data's reliability and fitness to serve its purpose in a given context.

For the Trusted Source of Data framework 100% data quality is the goal. GS1 may leverage a joint GS1 GO and TCGF Data Quality Breakthrough Project to better understand how to achieve this.

6.1.1. Data Quality Dimensions

Based on the results and recommendations from the B2C Phase 1 Pilot, the Data Quality Framework, and industry best practices, it is strongly recommended that the following dimensions be applied to each B2C critical business attribute starting with the data source and then checked or validated as it moves through the Trusted Source of Data Framework.

- Complete
 - □ Is data missing, according to the operational context (e.g. local nutrition labelling regulations)?
- Standards-based
 - Have standards been applied?
 - Does the data conform to the expected formats?
- Consistent
 - □ Is the data valid or in conflict across systems or applications for the same field?
 - □ Is the data valid or in conflict across interdependent data fields?
- Accurate
 - □ Is the data a correct reflection of the object/entity based on a recognized source? or
 - Has the data been certified?
- Timely
 - □ Is the data current?
 - □ Has a time frame been defined and is the data current within those guidelines?
- Unique
 - Are there unnecessary representations or duplications of the same data?
- Auditable
- Can the data be tracked to the brand-authorised source, at the point where the data enters the TSD Framework?



Once applied, for most of these dimensions, monitoring can be automated to ensure ongoing data quality. "Accuracy" will be a more manual, audit-driven process.

A data quality self-assessment SHOULD be done by the data source to identify their opportunities for data quality improvement.

Depending on what is identified in the self-assessment, there may be a third-party solution provider who can assist with the deployment of the solution required to support the DQ dimension. The following is an example of what might be generated from an assessment:

Кеу	DQ Requirement	DQ Dimension	DQ Attribute	DQ Constraint	DQ Assessment
GTIN	Carbs-Sugars	Completeness	UN_INFOODS_ CODE = SUGAR-	Not Null Null	Excellent Poor
GTIN	Carbs-Sugars	Standards Based	UN_INFOODS_ CODE = SUGAR-	Matches Global STD Matches Local STD Does not match STD	Excellent Good Poor
GTIN	Carbs-Sugars	Accuracy	UN_INFOODS_ CODE = SUGAR-	Same as on label Not same	Excellent Poor
GTIN	Carbs-Sugars	Consistency	UN_INFOODS_ CODE = SUGAR-	Same value as in other application Not the same value	Excellent Poor
GTIN	Carbs-Sugars	Timeliness	"TimeStamp"	 3 months 3 < 8 months 8 < 12 months > 12 months 	Excellent Good Fair Poor

6.1.2. B2C Data Quality opportunities

During the global Trusted Source of Data Pilot a number of issues were identified whereby the information was unsatisfactory for consumers. The table below lists data quality issues found for some products during the pilot. Products missing information (at least one field) were a least 70% of the total piloted and those containing inaccurate information represented many more. To achieve the vision of being a Trusted Source of Data, incomplete and inaccurate product data should represent 0% of the products with information published for consumer applications or in other words, 100% data quality.

The brief analysis coming from the Trusted Source of Data Pilot and other related initiatives shows that data quality is the single biggest challenge. At present:

- B2C data is not consistently presented to shoppers in a consumer friendly and easy to understand format
- There are many instances of suspect data, e.g., product claims do not match the nutrition panel and ingredients information



#	B2C DQ issue	Impact on Consumer	Probable causes
1.	'Brand Name' and 'Product Name' fields are inaccurate (does not match label)	Consumers won't trust information	GDSN field requires consistent formatting for B2C
2.	'Product Description', field is incomplete or inaccurate (does not match label)	Consumer cannot understand	GDSN field requires consistent formatting for B2C
3.	'Product website' field incomplete or inaccurate	Consumer cannot easily access website	GDSN field optional, inputting error or not product website (e.g. brand website)
4.	'Product Image' field incomplete or inaccurate	Consumer cannot easily relate to digital information	GDSN field optional or not considering B2C usage
5.	Product image format inconsistent (size, resolution, etc.)	Difficult for IAPs to serve to consumers	GDSN field requires consistent formatting for B2C
6.	Nutritional information fields incomplete or inaccurate	Consumers won't trust information or could have health impacted	Optional usage of GDSN Food & Beverage extension, GDSN fields requires consistent formatting for B2C
7.	Information changed for product, but GTIN did not	Consumers won't trust information or could have health impacted	Current GTIN Allocation rules were developed for B2B supply chain.*

*NOTE: It is recognized that under current standards the relationship between GTIN and nutrition information is a one-to-many relationship as is the relationship between GTIN and product image. It is also recognized that there is currently no standards for uniquely linking a GS1 identifier to nutrition information and product image. A work group of the Consumer Goods Forum (TCGF) will address this as an industry issue and make recommendations. Until such recommendations are developed and implemented, it is recommended that local implementations for Trusted Source of Data develop an approach to deal with this situation that is appropriate for the market(s) in which they operate.



6.1.3. B2C Data Quality recommendations (Local Implementation):

As brand-owners consider the deployment of their authorised product information into the digital space, it is important to understand:

1) Where the accurate product information for consumers is available in digital format within the business

2) How to maintain changes to the data to ensure updates are made

3) How to optimise the delivery process.

Since the data can be different both in the details and how it is managed depending on the systems, people, and customers for whom it is being prepared, GS1 recommends brand-owners adopt one of the immediate options:

- Align master data with Packaging Change process
- To enable a long term data quality program, the following should be executed:
 - Confirm list of business critical attributes supporting the key B2C business processes
 - Apply the data quality dimensions to business critical attributes with goal of zero defects

6.1.3.1. Align master data with Packaging Change process

Since Phase 1 of the B2C TSD project will focus on nutrition information, it is important that the information be extremely accurate. This information could have an impact on consumer health which is why in many regions it has been regulated. Most organisations have a well-defined process for review and approval of the label information such as the nutritional fact panel. It is our assumption that a digital as well as physical representation of the label goes through an organisational approval process.

We therefore recommend that the business maintain the digital information and prepare it for provisioning when:

- The label is approved for distribution
- The label information (basic product or nutritional data) changes

It is important to note that small changes to product packaging can impact a consumer's trust in digital information hence all relevant changes to the physical label must be replicated in the digital information. For example, if a label changes from a blue colour to a red colour the consumer could question whether they should trust the digital information on their phone since the product image is different than the physical product in their hand.

6.1.4. Proposed B2C Data Quality (DQ) Strategy Summary

Addressing the data quality concerns of B2C information is part of GS1's larger data quality strategy encompassing the "information supply chain" from B2B2C. Consequently GS1's DQ effort will include:

- Leveraging the Data Quality Framework (DQF) for B2B in all the countries
- The B2C TSD initiative identifying the categories, attributes and countries for which the data quality of B2C TSD needs to be improved.
- Partnering with The Consumer Goods Forum (TCFG) to secure the voluntary support of DQ Champion Manufacturers and Retails to provide B2C TSD Phase 1 data.
- Enhancing DQF to include improvements identified for B2C processes.
- Making DQ an industry priority by engaging key global, regional and local trade associations (e.g. TCGF, FMI, GMA, AIM, etc.)

For more information on the GS1 Data Quality vision and strategy please visit the GS1 Data Quality website: <u>http://www.gs1.org/gdsn/dqf</u>.



6.2.1. TSD Seal

Brand-owners require the applications to show consumers when they are accessing the authorized/authentic data from the TSD framework.

Consumers have product data today, but there is no way to differentiate between crowd-sourced data and authentic data (provided by brand-owners).

At a minimum, consumers need to know the source of certain types of information specifically when there could be an impact on health and well-being.

GS1 B2C TSD Data Aggregators, when providing access to the TSD framework, will provide the rules of seal usage to the IAPs to apply to their consumer-facing applications.

TSD Framework access could be disabled for IAPs that do not comply with the rules for seal usage.

TSD and the TSD Seal will be a trademark of GS1.

Apps/websites will have flexibility on how: 1) they show the seal and 2) they display and highlight TSD data/data source to the consumer.

Rules for TSD Seal Usage:

IAPs connected to the TSD Framework:

- MUST highlight data in the consumer-facing applications coming from the TSD framework that is brand-authorised with a note specifying the source by showing the brand name.
- MUST depict the seal as an image in the format that will be developed by GS1 Global Office and approved by the B2C Project Board.

How to report misuse of the seal

For the Local Implementation of the TSD Framework it is the responsibility of the brand-owner's B2C Data Aggregator to audit applications who are displaying the TSD Seal.

If an IAP is not in compliance with the usage agreement for the TSD Seal then the B2C Data Aggregator managing the data access for the IAP is responsible for addressing the issue.

If an IAP is found to be using the TSD Seal in a way that is not in compliance with the TSD Seal usage agreement they may also be reported to GS1 Global Office who will notify the responsible B2C Data Aggregator.



6.3. Data Integrity

Consumers need authentic product information to make informed choices since it could have an adverse impact their health and safety. Brand-owners also need to ensure that the accuracy and integrity of their data is preserved to protect their brand integrity additionally for reasons of liability as discussed in the next section. As Data Aggregators may provide data to other Data Aggregators downstream, the "freshness" of the data could be at risk and it becomes important to ensure that the consumer is getting the most current data.

It is recommended that an information lifecycle must be established. IAPs could cache data for indexing purposes only, but should refresh content periodically (e.g. every 24 hours).

Additional constraints to like encryption and security need to be discussed to protect data integrity. These and other standards aspects will be developed via the Global Standards Management Process (GSMP) working group.



6.4. Data Liability

The roles and responsibilities of each stakeholder participating in Trusted Source of Data Framework are in place to ensure that issues like consumer safety are enabled in such as system.

GS1 has conducted some limited research on the topic asking two questions: 1) are Data Aggregators, brand-authorised 3rd Party Content Providers, and IAPs liable if a third party claims that the information provided by brand-owners to the B2C TSD service is illegal (incorrect, misleading, infringes trademarks, etc.) and, 2) can Data Aggregators, brand-authorised 3rd Party Content Providers, and IAPs be held liable for the information transmitted even if it is not the source of that information?

The answer is that there are exceptions from legal liability. For example the EU e-Commerce Directive offers exemptions (i.e. "**Safe Harbours**") from criminal and civil liability for specific services provided by **Intermediary Service Providers (ISPs).** To qualify as an ISP, information must be provided by the recipient of the service and transmitted or stored at recipient's request. Thus:

- In the B2C Trusted Source of Data framework, data aggregators, GS1 Member Organisations and internet application providers qualify as an ISPs
- Brand-owners & customers are recipients of service

To benefit from Safe Harbour, the role of an ISP should be merely technical, automatic and passive in nature. There are 3 categories of ISP whose liability is limited by the Directive:

- Those who transmit information (mere conduits): Where an information society service is provided that consists of the transmission in a communication network of information provided by a recipient of the service, or the provision of access to a communication network, Member States shall ensure that the service provider is not liable for the information transmitted, on condition that the provider: (a) does not initiate the transmission; (b) does not select the receiver of the transmission; and (c) does not select or modify the information contained in the transmission. The acts of transmission and of provision of access include the automatic, intermediate and transient storage of the information transmitted in so far as this takes place for the sole purpose of carrying out the transmission in the communication network, and provided that the information is not stored for any period longer than is reasonably necessary for the transmission.
- Those who engage in caching information: Where an information society service is provided that consists of the transmission in a communication network of information provided by a recipient of the service, Member States shall ensure that the service provider is not liable for the automatic, intermediate and temporary storage of that information, performed for the sole purpose of making more efficient the information's onward transmission to other recipients of the service upon their request, on condition that: (a) the provider does not modify the information; (b) the provider complies with conditions on access to the information; (c) the provider complies with rules regarding the updating of the information, specified in a manner widely recognized and used by industry; (d) the provider does not interfere with the lawful use of technology, widely recognized and used by industry, to obtain data on the use of the information; and (e) the provider acts expeditiously to remove or to disable access to the information it has stored upon obtaining actual knowledge of the fact that the information at the initial source of the transmission has been removed from the network, or access to it has been disabled, or that a court or an administrative authority has ordered such removal or disablement
- Those engaged in hosting information: Where an information society service is provided that consists of the storage of information provided by a recipient of the service, Member States shall ensure that the service provider is not liable for the information stored at the request of a recipient of the service, on condition that: (a) the provider does not have actual knowledge of illegal activity or information and, as regards claims for damages, is not aware of facts or circumstances from which the illegal activity or information is apparent; or (b) the provider, upon obtaining such knowledge or awareness, acts expeditiously to remove or to disable access to the information.



A deeper analysis of the different roles within the GS1 Trusted Source of Data framework needs to be developed concerning data liability and the impact on consumers.

NOTE: In the event of unauthorised modification of brand-authorised data, the party making the unauthorised modification bears all liability for resulting claims, not the brand owner.



7. Appendix: Reference Information

7.1. B2C TSD Proof-of-Concept

In June 2011 a Proof of Concept (PoC) sought to test a basic architecture for the system that would support this goal of allowing brand-authorized product information to reach consumers via internet application providers.

The system used for the PoC was designed with the following considerations in mind:

- leverage existing standards based on product data used by the Global Data Synchronization Network (GDSN) and other authorised 3rd party content providers
- focus on basic and nutritional information: 1) desired by consumers, 2) available by brandowners, and 3) already a standard in GDSN.

The PoC was deemed successful as it met the criteria of allowing a mobile application designed by an Internet Application Provider (IAP) to send a request for information about a specific product and receive and display this information as authorised by the brand-owner. The PoC learnings have been helpful in building the future foundations of a GS1 Trusted Source of Data framework. For the full PoC Report go to:

http://www.gs1.org/docs/b2c/GS1_TSD_Proof_of_Concept_Report.pdf

7.2. B2C TSD Pilot and Virtual Shelf Demo

Between July and December 2011, a global pilot was organised to perform a more robust test of this system than the PoC, with more participants and product data.

The pilot had 8 countries (GS1 Member Organisations) facilitating providing brand-authorized product data to consumers via internet application providers. Some additional participation:

- 30+ Brand-owners
- 900+ Products
- 5 B2C Data Aggregators
- 5 Internet Application Providers

Additionally and virtual shelf demonstration was developed leveraging data from the pilot to show the need for "providing digital product information that consumers can trust".

For the detailed Pilot Report go to http://www.gs1.org/docs/b2c/GS1_TSD_Pilot_Report.pdf

7.3. The Consumer Goods Forum (TCGF) Alignment

In the 30 November, 2011 TCGF Board meeting a Call to Action for the GS1 B2C TSD was unanimously supported:

- TCGF Board to establish the GS1 B2C Trusted Source of Data (GS1 TSD) as a strategic priority for TCGF
- TCGF Board to appeal to member Companies to join the pilot tests in the 8 countries
- TCGF Board to assign collaboration responsibility within the Operational Excellence Pillar to a work group with members from the Connecting Business for Consumers Committee, the Marketing Committee and the Health & Wellness group
- TCGF Operational Excellence Committees to study and propose action plans for key industry topics that may represent barriers to realizing the vision e.g. Data Quality and GTIN discipline
- The joint GS1/CGF team will evaluate the results of the pilot tests once completed and then ask TCGF Board for further commitment



7.4. Contribution from GS1 in Europe MobileCom/B2C Group

GS1 B2C Rules for using Trusted Source of infrastructure Data (http://www.gs1.eu/index.php?page=&tudasbazis=60&lister=188), is a set of basic rules for ensuring a good understanding of all parties involved in the GS1 TSD infrastructure developed by the GS1 in Europe MobileCom/B2C Group. Many of these concepts have contributed to the development of the B2C TSD Project Report. It should be noted that the B2C TSD Project Report represents the Global rules for Operations within the TSD Framework, yet specific regions and B2C Data Aggregators may choose to go beyond these basic rules of participation.

7.5. Standards Development

Standards development for the global interoperability between B2C Data Aggregators and for the global product data model started in February of 2012. For more information or to get involved go to http://www.gs1.org/gsmp/community/working_groups/gsmp#b2c_tsd

7.6. Information Population

7.6.1. Basic Product Information

To accurately identify a physical product in the digital world, the basic product information provided by a brand-owner can help assure a consumer there is a match between the product they are holding and the information they are receiving. For Phase 1 of the TSD the following attributes represent the Basic Product Information:

- Brand Name
- Product Name
- Brand-owner Name
- Product Description
- Product Image URL
- Product URL

7.6.2. Nutritional Information

The focus of the Phase 1 Nutritional information is an intersection of three criteria: desired by the consumer, accessible for brand-owner, and communicable via GDSN.



The following attributes represent Phase 1 Nutrition Information:

- Vitamin A
- Vitamin C
- Calcium
- Iron
- Proteins
- Calories/Energy-Total
- Calories/Energy-From Fat
- Carbs-Total
- Carbs-Dietary Fibre
- Carbs-Sugars
- Fat-Total
- Fat-Saturated
- Fat-Trans
- Fat-Polyunsaturated
- Fat-Monounsaturated
- Cholesterol
- Sodium
- Serving Size
- Servings Per Container



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For specific details on publishing items into GDSN, see the <u>GDSN Catalog Item Sync Standard</u>. For implementation best practices for the nutritional product data, see the <u>Food and Beverage</u> <u>Implementation Guide</u> and the <u>GS1 US Infoods Guide</u>. For definitions of product attributes see the <u>GS1 Global Data Dictionary</u>.

		GDSN additional
32C Attributes GDSN attribute		information
Basic Data	GDSN Trade Item attribute	
	TradeItemDescriptionInform	
Brand Name	ation -> brandName	
Product Name	TradeltemDescription -> text	
	BrandOwnerOfTradeItem ->	
Brand Owner Name	nameOfBrandOwner	
	AdditionalTradeItemDescript	
Product Description	ion -> text	
		Alternatively, this could
		also be used if
		PRODUCT_IMAGE is
		empty
		ExternalFileLink ->
	External File Links	uniformResourceIdentifie
	ExternalFileLink ->	r TradaltamEvtarnallaform
	TradeltemExternalInformatio	
	n -> typeOfInformation =	typeOfInformation =
Product Image LIRI		PRODUCT LABEL IMAGE
i roudet initige one	ExternalFileLink ->	
	uniformResourceIdentifier	
	TradeItemExternalInformatio	
	n -> typeOfInformation =	
Product URL	WEBSITE	
Food & Nutrition -	GDSN F&B extension	
Nutrients	attribute	
	FoodAndBeverageNutrient ->	FoodAndBeverageNutrien
	nutrientTypeCode	t
Nutrients-Vitamins-	-> UN_INFOODS_CODE =	-> measurementPrecision
Vitamin A	VITA-	- Nutrient is exact or
	FoodAndBeverageNutrient ->	approximate
Nutriants Vitamins		-> quantityContained -
Vitamin C		Amount contained
Vitalilli C	FoodAndBeverageNutrient ->	relative to serving size
Nutrients-Minerals-	nutrientTypeCode	->
Calcium	-> UN_INFOODS_CODF = CA	percentageOfDailyValuel
	FoodAndBeverageNutrient ->	ntake - The percentage of
	nutrientTypeCode	the recommended daily
Nutrients-Minerals-Iron	-> UN INFOODS CODE = FE	Intake of a nutrient as
	– – – FoodAndBeverageNutrient ->	authorities of the target
	nutrientTypeCode	market is expressed
	-> UN_INFOODS_CODE =	relative to the serving
Nutrients-Proteins	PRO-	size and base daily value
		intake.
Nutrients-	FoodAndBeverageNutrient ->	



Calories/Energy-Total	nutrientTypeCode	
	-> UN_INFOODS_CODE =	
	ENER-	
	FoodAndBeverageNutrient ->	
Nutrients-	nutrientTypeCode	Code from the list of the
Calories/Energy-From	-> UN_INFOODS_CODE =	INFOODS food
Fat	ENERPF	component tagnames
	FoodAndBeverageNutrient ->	(IIIIp://www.ido.org/IIIo
		identifying nutrients
Nutrients-Carbs-Total	-> 0N_IN 0003_0000 = CHO-	contained in the product.
	FoodAndBeverageNutrient ->	
	nutrientTypeCode	
Nutrients-Carbs-Dietary	-> UN INFOODS CODE =	
Fiber	FIBTSW	
	FoodAndBeverageNutrient ->	
	nutrientTypeCode	
	-> UN_INFOODS_CODE =	
Nutrients-Carbs-Sugars	SUGAR-	
	FoodAndBeverageNutrient ->	
	nutrient lypeCode	
Nutrianta Est Total	-> UN_INFOODS_CODE =	
Nutrients-rat-rotai	FAINLEA FoodAndBeverageNutrient	
	nutrientTypeCode	
	-> UN_INFOODS_CODE =	
Nutrients-Fat-Saturated	FASAT	
	FoodAndBeverageNutrient ->	
	nutrientTypeCode	
	-> UN_INFOODS_CODE =	
Nutrients-Fat-Trans	FATRN	
	FoodAndBeverageNutrient ->	
. . .	nutrientTypeCode	
Nutrients-Fat-	-> UN_INFOODS_CODE =	
Folyulisatulateu	FAFU	
	nutrientTypeCode	
Nutrients-Fat-	-> UN INFOODS CODE =	
Monounsaturated	FAMS	
	FoodAndBeverageNutrient ->	
	nutrientTypeCode	
	-> UN_INFOODS_CODE =	
Nutrients-Cholesterol	CHOL-	
	FoodAndBeverageNutrient ->	
Nutrianta Cadiuna		
Nutrients-Soaium	-> UN_INFOUDS_CODE = NA	
Nutrients-Serving Size	formation -> servingSize	
Hathents-serving size	FoodAndReverageNutrientIn	
Nutrients-Servings Per	formation ->	
Container	householdServingSize	