



Data Quality Framework including the Data Quality Protocol

Version 1.0



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1. Data Quality Framework – Executive Summary

1.1 Background

In July 2005 a Joint Business Planning (JBP) team was assembled to address the issue of data quality within the global supply chain. The JBP team is comprised of suppliers, retailers and representatives from the following industry associations: AIM, CIES, ECR Europe, FMI, GCI, GMA and GS1.

The suppliers represented on the JBP team are Unilever, P&G, Kraft, SCA, Campbell's and General Mills. The retailers represented on the team are Ahold, Carrefour, Tesco and Wegmans.

The team's goal was to develop a best practice framework for a global data quality solution. A set of guiding principles articulates key principles adhered to by the JBP Task Force in developing the data quality framework.

The challenge for the JBP team (and the industry at large) is to develop a framework that will meet both current and future data quality needs. Therefore the JBP team requests those who review the JBP materials are mindful of both current opportunities, and data quality considerations that will drive future collaborative commerce.

1.2 The Benefits of Good Quality Data

Good quality data is foundational to collaborative commerce. Good quality data means that all master data is complete, consistent, accurate, time stamped and industry standards based. By improving the quality of data within the end-to-end global supply chain, trading partners will reduce costs, improve productivity and accelerate product speed to market.

Good data quality will improve internal business processes for manufacturers, retailers, wholesalers, intermediaries and other third parties. For example, more accurate information on product weights and dimensions will contribute to better freight utilisation, eliminate the need for multiple measurement of the same product along the supply chain, and reduce the number of resources required to re-work programmes.

Suppliers of data have a responsibility to timely synchronise complete, consistent, accurate, available, time stamped and standard compliant data to their customers. The JBP Data Accuracy team recommends data synchronisation through the industry best practice Global Data Synchronisation Network (GDSN). In return, recipients of data must have the internal processes and procedures in place to protect the integrity of data they receive via the GDSN. For example, Purchase Order data sent to a supplier should be consistent with data received via the GDSN.

1.3 Data Quality Framework

1.3.1 Data Quality Protocol

Central to the Data Quality Framework is the Data Quality Protocol. The protocol has two components:

- i) A data quality management system to validate the existence and effectiveness of key data management business processes
- ii) An inspection procedure to physically validate product attributes.

The objective of the data quality management system is to provide guidance for organisations to establish, implement, maintain and improve a data quality management system. The JBP team views the data quality management system as critical to the medium to longer-term vision for consistent high quality data to flow through the global supply chain. This system will focus on the existence of internal business processes, procedures and common performance criteria.

The objective of the inspection procedure is to define a standardised approach for data inspection. Existing GS1 standards are referenced in the inspection procedure, such as the GS1 measuring rules. The procedure will evolve with GS1 standards, and as an example will include packaging tolerances as defined by the Global Standards Management Process (GSMP). Where standards do not currently exist the procedure provides best practice guidelines – such as a list of common attributes for inspection and sample size recommendations.

It is also the objective for the inspection procedure on the medium to longer-term implementation basis to merge into the data quality management system.

The JBP team recognises the inspection procedure must be flexible and implemented based on the requirements of a given trading partner relationship. For example, depending on how advanced a supplier and/or retailer are in their data quality journey, an initial requirement could be to inspect only a subset of the attributes included in the inspection procedure.

The JBP team recommends the widespread usage of the Data Quality Protocol, especially for companies in the GDSN community. However, the JBP team also recognises that compliance to and usage of the protocol is *voluntary*.

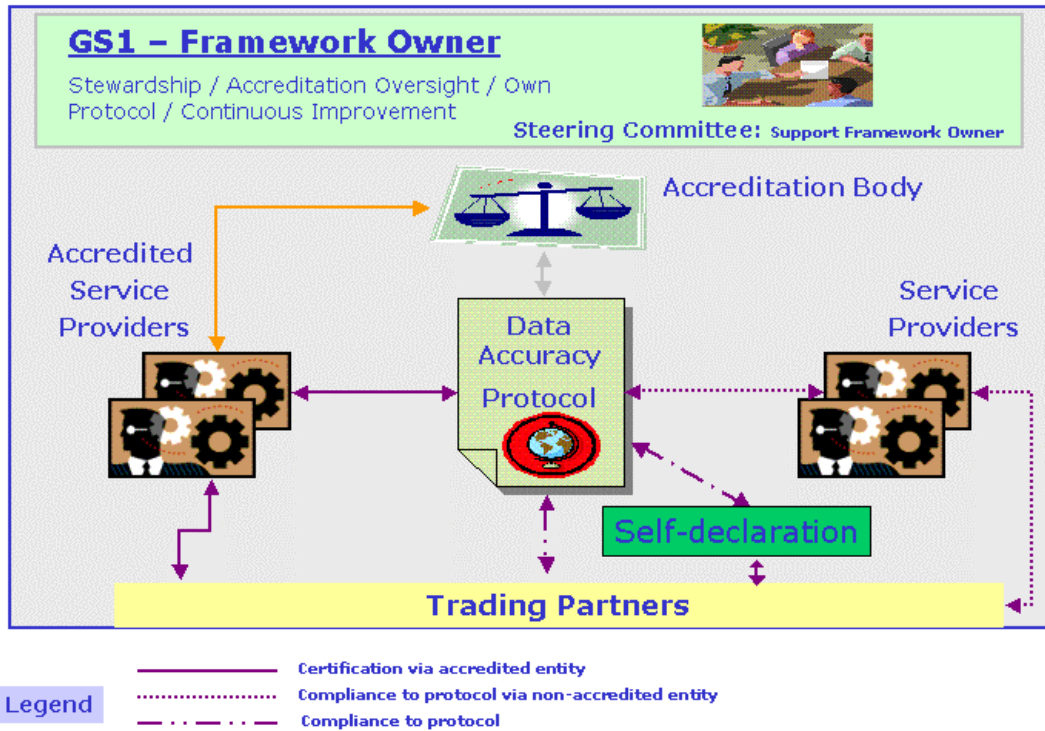
1.3.2 Governance Model

GS1, owning the Protocol, provides overall stewardship of the Data Quality Framework and GS1 GDSN Inc. manages it. GS1 GDSN Inc. will promote it within the industry, has set up a Steering Committee and will implement a continuous improvement process for the Framework.

The Data Quality Framework is based on an open system whereby any accredited business entity may offer product inspection, and/or data quality management **certification** with reference to the Data Quality Protocol. GS1 GDSN Inc. will

employ a neutral accreditation authority to accredit certification bodies (for trading partner relationships that require certification).

Achievements - Data Quality Framework



The model is based on the premise that trading partners should choose the data quality approach that best meets the needs of their trading partner relationship, for example, engage with an accredited service provider to obtain certification or engage with a non-accredited service provider to record compliance to the protocol. Widespread usage of the protocol is actively encouraged (as improved data quality will result from compliance to the protocol), although certification cannot be provided by non-accredited organisations. Alternatively self-declaration option will be available for companies who have the internal capabilities to demonstrate compliance with the protocol.

GS1 will further define how their organisation will support the overall stewardship and management of the Data Quality Framework. It is anticipated that after launching the protocol and the first phase will be to develop a certification programme throughout 2006.

As a certification programme is being developed service providers and trading partners are encouraged to begin usage of the protocol. It is also accepted that future evolution of the Framework will adhere to the guiding principles developed by the JBP team.

The seven industry associations represented on the JBP Data Accuracy team have facilitated an industry review period with their member companies. The JBP Data Accuracy team is now formally disbanded and has handed responsibilities over to GS1 GDSN Inc.

2. Guiding Principles

The JBP Data Accuracy charter is to develop a best practice data quality framework for data synchronised within the global supply chain.

The Global Data Dictionary (GDD) attributes provide the starting point for the framework. It is expected that the framework will evolve to include more data attributes and business information as exchanged between trading partners, with the involvement of the GDD.

The JBP Data Accuracy team believes the full potential of the Global Data Synchronisation Network (GDSN) will not be realised until trading partners enable the following:

- Good quality product information is aligned across internal manufacturer systems
- Good quality product Information is synchronised through the GDSN
- Product Information within retailer systems is aligned with the product information received via the GDSN

In developing the Data Quality framework, the following guiding principles have been adhered to. The data quality framework:

1. Is based on user needs (e.g., suppliers and recipients of data)
2. Is strongly encouraged within the Global Data Synchronisation Network community, yet is voluntary
3. Is implemented based upon requirements of a given trading partner relationship
4. Is comprehensive in its structure and potential implementation, yet provides for flexible implementation, as required by the trading partners
5. Minimises implementation, management and other additional costs to the global supply chain, and enables readily quantifiable benefits to all supply chain partners
6. Is complementary to and evolves with changes to GS1 standards
7. Is based on a Data Quality industry protocol
 - The protocol has two components; i) data inspection against product characteristics, and ii) a data quality management procedure to validate the existence and effectiveness of key data management business processes
 - The inspection component of the protocol defines a standardised approach for product inspection (e.g., use GS1 measuring rules,

inspect common attributes, use a common sample size and leverage GS1 packaging tolerances). It accounts for small, medium and large enterprises

- The data quality management component of the protocol provides guidance for organisations to establish, document, implement, manage, maintain and improve a data quality management system
8. Enables trading partners to choose their data quality approach (e.g., engage with accredited entity to obtain certification, engage with a non-accredited entity, or self-declare). Self-declaration is an option for companies that have internal capabilities to comply with the protocol
 9. Is based on an open system, whereby any accredited business entity may offer product inspection and/or data quality management **certification** with reference to the Data Quality protocol
 10. Allows any business entity to use the Data Quality protocol -- its widespread application is actively encouraged. However, **certification** cannot be provided by a non-accredited organisation
 11. Has been subject to an industry review period
 12. Includes ongoing governance to provide stewardship over the framework. A Steering Committee will be responsible for employing a neutral accreditation authority to accredit certification bodies (for business entities that wish to be certified). The Steering Committee will also be responsible to implement a continuous improvement process for the data quality framework
 13. Is based on a principle that manufacturers own and are responsible for the data they synchronise through their "Home Data Pool", and that they do not accept any third-party updates in the public domain (without their consent).

The intended user community for this framework is comprised of manufacturers, retailers, wholesalers, intermediaries, GS1 Member Organisations, data pools and solution providers.

Data Quality Protocol

3. Data Quality Management System Requirements (DQMSR)

3.1 Scope

This chapter specifies requirements for a data quality management system, to enable an organisation to develop and implement a policy and objectives for data quality in order for them to produce good quality data. It takes into account data synchronisation and other requirements to which the organisation subscribes. It does not state specific data quality management performance criteria.

The DQMSR are applicable to any organisation that wishes to:

- a. Establish, implement, maintain and improve a data quality management system
- b. Assure itself of conformity with its stated data quality management policy
- c. Demonstrate conformity to this chapter by:
 - Making a self-declaration, or
 - Seeking confirmation of its conformance by parties having an interest in the organisation, such as customers, or
 - Seeking certification of its data quality management system by an external organisation.
- d. Seek confirmation of its self-declaration by a party external to the organisation.

All the requirements in this chapter are intended to allow incorporation into any data quality management system. The extent of the application depends on factors such as the data quality management policy of the organisation, the nature of its activities, products and services and the requirements made by other users of the organisation's data.

This chapter is applicable for all organisations that generate and store product data before publishing product data into (external) data pools.

This chapter does not apply to data use in general and does not include requirements for maintaining data structure and completeness in processes such as procurement. To manage these data issues, data users shall commit to GDSN rules for data use.

3.2 Data Quality Management System

3.2.1 General requirements

3.2.1.1 General requirements

The organisation shall establish, document, implement, manage and maintain a data quality management system and continually improve its effectiveness in accordance with the requirements of this chapter.

Responsible management shall provide evidence of its commitment to the development and implementation of the data quality management system and to continually improving its effectiveness by:

- Communicating to the organisation the importance of meeting this chapter's requirements
- Establishing a data quality management policy
- Ensuring that quality objectives are established.

Where separate data quality management systems exist, the organisation shall ensure that the information provided by these systems is consistent. Where an organisation chooses to outsource any process that affects compliance with the requirements in this chapter, the organisation shall ensure control over such processes. Control of such outsourced processes shall be identified within the data quality management system.

3.2.1.2 Documentation requirements

The data quality management system documentation shall include:

- Documented statements of a data quality management policy and data quality management objectives
- A data quality management manual
- Documented procedures where indicated in this chapter
- Documents needed by the organisation to ensure the effective planning, operation and control of its data quality management processes
- Records where indicated in this chapter.

3.2.2 Data quality management policy

Responsible management shall ensure that the data quality management policy:

- Is aimed at assuring good quality data, including data accuracy
- Includes a commitment to comply with relevant requirements, like GDSN, ISO and GS1 requirements and continually improve the effectiveness of the data quality management system
- Provides a framework for establishing and reviewing data quality objectives
- Is communicated and understood within the organisation
- Is reviewed for continuing suitability.

3.2.3 Planning

3.2.3.1 Data quality management information

The organisation shall have in place a documented structure, which is designed and maintained to meet all of the requirements established under clause 3.2.1.1 of this protocol and to provide adequate support and information to the organisation for this. It shall include provision to support the development, implementation and achievement of the data quality management policy, strategy, risk identification, assessment and control, objectives, targets and plans. It shall also support all of the requirements related to implementation and operation, checking and corrective actions and the management review.

The information shall be accessible to all relevant employees and other relevant third parties including contractors as appropriate.

3.2.3.2 Data quality requirements

The organisation shall establish and maintain a procedure for identifying and accessing the data synchronisation requirements and other (legal) requirements that are applicable to data management.

The organisation shall keep this information up-to-date. It shall communicate relevant information on data quality and other related requirements to its employees and relevant third parties including contractors.

3.2.3.3 Data quality management processes

The organisation shall plan and carry out all data quality management processes under controlled conditions. Controlled conditions shall include, as applicable:

- The availability of information that describes the origin of the data
- The availability of work instructions
- The use of suitable equipment
- The availability and use of monitoring and measuring processes and devices
- The implementation of monitoring and measurement
- The implementation of release, delivery and post delivery activities.

3.2.3.4 Product data database structure and IT infrastructure and safeguards

The organisation shall determine, provide and maintain the product data database(s) and IT infrastructure needed to achieve conformity to data quality requirements.

The structure shall:

- Secure integrity of the data
- Be suitably formatted for data processing and storage
- Be accessible for review and verification purposes
- Have access provisions and limitations
- Ensure traceability of amendments
- Be suitable for internal and external data exchange.

3.2.3.5 Objectives

Responsible management shall ensure that data quality management objectives, including those to meet data synchronisation requirements, are established at relevant functions and levels within the organisation. The data quality management objectives shall be measurable and consistent with the data quality management policy.

3.2.4. Implementation and operation

3.2.4.1 Responsibilities

Responsible management shall ensure that data quality management responsibilities and authorities are defined, documented and communicated within the organisation.

Responsible management shall appoint a manager or managers who, irrespective of other responsibilities, shall have the responsibility and authority to:

- Ensure that processes needed for the data quality management system are established, implemented and maintained
- Report to responsible management on the performance of the data quality management system and any need for improvement
- Ensure the promotion of awareness of data quality requirements throughout the organisation.

If more than one manager is appointed the division of responsibilities shall be recorded and communicated throughout the organisation.

Responsible management shall ensure that the integrity of the data quality management system is maintained when changes to the data quality management system are planned and implemented.

3.2.4.2 Reviews

At suitable stages responsible management shall perform systematic reviews of processes, procedures, documents and product data in accordance with planned arrangements:

- To evaluate the ability to meet data quality requirements
- To identify any issues and propose necessary action.

Participants in such reviews shall consist of representatives of functions concerned with data quality. Records of the results of the reviews and any necessary actions shall be maintained.

3.2.4.3 Personnel, competence, skills and experience

Personnel performing work that might affect data quality shall be competent on the basis of appropriate education, training, skills and experience.

The organisation shall:

- Determine the necessary competence for personnel performing work that might affect data quality
- Provide training or take other actions to satisfy these needs
- Evaluate the effectiveness of these actions
- Ensure that its personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives
- Maintain appropriate records of education, training, skills and experience.

3.2.4.4. Internal communication

Responsible management shall ensure that appropriate communication processes are established within the organisation and that communication takes place regarding the importance of and performance on data quality.

3.2.4.5 Operational control

3.2.4.5.1 General

The organisation shall establish, maintain and document the operational processes needed for product measuring and data generation, product master data input, product master data handling and external data publishing, consistent with the requirements of the data quality management system.

Operational processes and business decisions influencing product attributes shall be identified. Where appropriate, provisions shall be made in these processes to ensure that any change in data characteristics is recorded and that appropriate actions are undertaken to continuously guarantee the good quality of published data.

3.2.4.5.2 Data generation and verification and product measurement

The organisation shall establish and maintain a procedure / procedures for data generation and verification, and product measurement in accordance with GS1 requirements.

The organisation shall determine appropriate:

- Methods for measuring product attributes
- Measuring equipment
- Measuring locations and conditions
- Personnel to perform the measurements
- Methods for the recording of measurement data.

These procedures shall be reviewed for adequacy.

The measurement output data shall be:

- Stated in internationally accepted units of measurement
- Suitably formatted for review and data processing.

3.2.4.5.3 Product master data input into internal data systems

The organisation shall establish and maintain procedures for data input and creation and shall review these for adequacy. The data input process shall ensure that received data is correctly entered into the internal (data supplier) database.

3.2.4.5.4 Product master data management

The organisation shall establish and maintain a procedure for product master data management.

The master data management process shall include:

- All necessary provisions to ensure that product data is not changed or deformed after data input
- Access and change authorisation
- Data storage that assures data integrity.

3.2.4.5.5 External data publishing

The organisation shall establish and maintain procedures to control the process of publishing product data into external data pools.

The data publishing process shall include all necessary provisions to ensure that product data published into external data pools are accurate, are based upon the actual product characteristics and that published data can be traced back to its origin.

The data publishing procedure shall include:

- Data publishing with sufficient safeguards for accuracy, integrity and completeness
- Data verification prior to publishing where the resulting output cannot be verified by measurement
- Data publishing co-ordination throughout the organisation and its production locations, business units, divisions and departments
- Appropriate authorisation
- Traceability back to source for verification and correction
- Adherence to GTIN-allocation rules.

Responsible management shall appoint a manager or managers who, irrespective of other responsibilities, shall be made responsible for data publishing.

If more than one manager is appointed the division of responsibilities shall be recorded and communicated throughout the organisation.

3.2.5. Measuring and monitoring

3.2.5.1 Monitoring processes and analysis

The organisation shall apply suitable methods for monitoring the data quality management system processes, and, where applicable, measure results.

These methods shall demonstrate the ability of the processes to achieve policy objectives and shall include (key) performance indicators defined at relevant functional levels within the organisation.

At regular intervals the performance of the data quality management system shall be evaluated against these performance indicators.

When planned results are not achieved, corrective action shall be taken as appropriate to ensure conformity of the data quality management system.

3.2.5.2 User feedback

The organisation shall establish and maintain a documented procedure for dealing with user feedback (including complaints) received from data recipients and other relevant parties. This procedure shall include feedback analysis and a written response to the data recipient or other relevant party.

3.2.5.3 Preventive action

The organisation shall establish and maintain a documented procedure to eliminate the causes of potential data quality issues in order to prevent their occurrence. Preventive actions shall be appropriate to the effects of the potential problems.

This procedure shall include provisions to:

- Determine data quality issues and their causes
- Evaluate the need for action to prevent occurrence of data quality issues
- Determine and implement necessary actions
- Keep records of results of action taken
- Review preventive action taken.

3.2.5.4 Corrective action

The organisation shall establish and maintain a documented procedure to eliminate the cause of data quality issues in order to prevent recurrence. Corrective actions shall be appropriate to the effects of the data quality issues encountered.

This procedure shall include provisions to:

- Review data quality issues (including user feedback)
- Determine the causes of data quality issues
- Evaluate the need for action to ensure that data quality issues do not recur
- Determine and implement action needed
- Correct data in the product master data
- Record the result of action taken and
- Review corrective action taken.

All corrections should be made both in product master data and published data.

3.2.5.5 Internal audits

The organisation shall conduct internal audits at planned intervals to determine whether the data quality management system conforms to the planned arrangements, the requirements of this chapter and the data quality management system requirements established by the organisation, and whether it is effectively implemented and maintained.

Audit programmes shall be planned, established, implemented and maintained by the organisation, taking into consideration the importance of the data quality management system processes and the results of previous audits.

The organisation shall establish and maintain a documented audit procedure that addresses:

- Responsibilities and requirements for planning and conducting audits, reporting results and retaining associated records,
- Determination of audit criteria, scope, frequency and methods.

The selection of auditors and the conduct of audits shall ensure objectivity and impartiality of the audit process.

3.2.6 Management review of system performance

Responsible management shall review the organisation's data quality management system and performance on data quality at planned intervals, to ensure its continuing suitability, adequacy and effectiveness. This review shall include assessing opportunities for improvement and the need for changes to the data quality management system, including the data quality management policy and objectives. Records from management reviews shall be maintained.

The Review input shall include:

- Results of audits
- Reports from data quality management inspections
- Data user and stakeholder feedback
- Process performance
- Data accuracy
- Status of preventive and corrective actions
- Follow-up actions from previous management reviews
- Changes that could affect the data quality management system and
- Recommendations for improvement.

The Review output shall include any decisions and actions related to:

- Improvement of the effectiveness of the data quality management system and its processes to ensure data quality and accuracy
- Improvement of customer related requirements with respect to data quality management
- Resource needs.

4. Self-declaration

The GSI GDSN Inc. Data Quality Steering Committee has the responsibility to develop a policy for the option of self-declaration. The contents of this chapter will be produced in the second half of 2006.

5. DQMSR Certification System

5.1 Introduction

This chapter is based on the ISO/IEC guide 65:1996 “General Requirements for bodies operating product certification systems”, and provides a framework for certification bodies to perform DQMSR audits. It sets qualification criteria for certification bodies and staff, and sets rules for the execution of audits and the issuing of certificates. In short it is the guideline for bodies issuing DQMSR certificates.

The certification system consists of the following three elements:

1. The Data Quality Management System Requirements (DQMSR chapter 3)
2. The DQMSR Certification System (this chapter)
3. The DQMSR certificate.

Alternatively, organisations may opt for self-declaration. In that case the elements 2 and 3 do not apply.

The DQMSR can be applied to any type of data supplier (hereafter referred to as “organisation”).

In order to facilitate the implementation of DQMSR, GS1 GDSN Inc. will:

- Facilitate the issuing of DQMSR certificates on the basis of verification by approved certification bodies
- Publicise the names of certified organisations and their scope of services
- Check for misuse of the certificates by (certified) organisations
- Cancel or withdraw certificates if appropriate.

To audit against the DQMSR, GS1 GDSN Inc. solely concludes agreements with accredited certification bodies. As regards to DQMSR it will allow certification bodies to audit against DQMSR on behalf of GS1 GDSN Inc. only if they hold accreditation for ISO 9001.

5.2 Organisation of the certification body auditing against DQMSR

The organisation of the certification body is based on the ISO/IEC Guide 65:1996 and the associated International Accreditation Forum (IAF) Guidance.

The GS1 GDSN Inc. Steering Committee has the right to interpret this document and if necessary to supplement it.

5.2.1 Work area of the certification body

The certification body shall:

- Have a system for internal use for determining what competencies should be available to perform audits against DQMSR
- Be able to perform a competence analysis
- Be able to demonstrate that an analysis of the necessary competence was made
- Be able to demonstrate that it is capable of analysing the data quality aspects for various organisations

5.2.2 Organisation of the certification body

The impartiality of the certification body is an essential condition for trust in the certificate. It is the certification body's responsibility to ensure that individuals working for the certification body's auditing process have not been involved in any DQMSR consultancy activities for the organisation to be certified, that may lead to a conflict of interest during the two years preceding the audit, based on the principle that an auditor should not audit his own work.

The certification body shall accept decisions from GS1 GDSN's Steering Committee, through which interested parties can influence the audit method.

The function of the staff within the certification body is to review whether the certification body is able to carry out the audit for each applicant for a certificate. The staff shall also be able to select, train and prepare auditors. The staff shall be capable of implementing procedures for performing audits and re-audits.

The certification body shall have criteria for training of auditors and appointing auditors and ensure that the auditor meets the requirements set with respect to matters such as:

- Understanding of data quality issues
- Knowledge of companies and data systems to be audited
- Knowledge of guidelines and regulations.

The audit shall be performed by a person or a team.

The certification body shall distinguish between the process of auditing and the decision about issuing and withdrawing certificates. This decision shall be taken impartially. The power of decision may be with an individual or with a group. The auditor shall prepare a report for the decision maker(s) at the certification body and for the organisation involved.

5.2.3 Competence of the personnel

Competence requirements are applicable for auditors and individuals deciding on certification. An auditor shall have relevant practical experience in the following fields:

- Data quality management aspects
- Management systems and auditing methods
- Techniques aimed at improving and controlling data accuracy
- Knowledge of GS1 package measurement rules.

The ability of an auditor to act independently can be demonstrated, for example, by experience as lead auditor in the auditing of other management systems. The auditor is responsible for leading the auditing process in line with the set criteria.

The group or the individual who decides about issuing a certificate shall have the knowledge and expertise in all areas sufficient to evaluate the auditing process and the recommendations of the auditor. The certification body shall have written procedures available laying down these requirements. The certification body shall clearly document the qualified auditor's input in the decision-making. Further the certification body shall have staff competent to set up and operate procedures for appeals, complaints, and disputes.

5.2.4 Other organisational facilities and procedures

Important organisational facilities and procedures to be provided by the certification body are:

- A quality manual and associated procedures
- A guarantee of the confidentiality of information obtained
- The handling of appeals against decisions taken by a certification body
- Carrying out internal reviews within the certification body regarding compliance with these guidelines.

5.3 Document review, implementation review and certificate

5.3.1 The organisation

The certification system for DQMSR can be applied to any type of organisation. The certification body shall first perform a contract review to determine if the activities of the organisation to be certified fit within the scope of the certification body. In line with ISO Guide/IAF Guidance the following aspects shall be clearly defined for any organisation to be certified:

- The activities
- The site
- The managerial responsibilities
- An implemented data quality management system in line with DQMSR.

5.3.2 Certification audit

In line with ISO/IEC Guide 65, the initial audit consists of a phase 1 and a phase 2 audit.

Phase 1 audit

The objective of the phase 1 audit is to gain sufficient insight into the management system so as to aid the planning process for the phase 2 audit. The organisation's preparedness for certification will be assessed. An investigation will be made of the degree to which:

- The DQMSR management system was established in order to achieve the organisation's data quality policy
- Processes are in line with DQMSR requirements
- The internal audit conforms to the DQMSR
- The management reviews have taken, among other things, evaluation of the effectiveness of the DQMSR management system into account.

A review of documents is part of the phase 1 audit. The place where the phase 1 audit is performed can be decided in consultation with the organisation.

The certification body shall be able to demonstrate that review of all elements of the DQMSR has been part of the phase 1 audit. Non-conformities identified shall be addressed and solved before a certificate can be granted. The Phase 2 audit can be planned before all non-conformities are solved.

Phase 2 audit

The objectives of the phase 2 audit are:

- To confirm that the organisation complies with its own policies and procedures
- To confirm that the management system complies with all elements of the DQMSR and is capable of achieving the organisation's policy objectives
- To audit/inspect samples of product measurement and data generation
- To audit the method for processing data for a number of products.

A DQMSR certificate means that data quality is managed.

Special attention shall be paid to:

- Setting the criteria for data quality
- Defining responsibilities for data quality processes
- The resulting objectives and targets
- The management of work activities
- The measurement, monitoring, reporting and review of the results in relation to the objectives and targets
- The identification and evaluation of non-conformities, and the effectiveness of corrective and preventive action
- The internal audits and the management's review of the effectiveness of the system
- The management's responsibilities for the data quality policy
- The relations between policy, processes and results.

The phase 2 audit always takes place at the site of the organisation. The certification body shall base its plan for the performance of the phase 2 audit on the phase 1 audit.

5.3.3 Observation, improvement note and non-conformance

Three levels of findings will be identified in the audit reports:

Observation

A finding requiring attention by the organisation, although not necessarily requiring remedial action.

Improvement note

An isolated or sporadic lapse in the content or implementation of procedures or records, which could reasonably lead to failure of the system if not corrected.

Non-conformity

The absence of one or more required DQMSR system elements or incomplete documentation and information, which raise significant doubt as to the capability of the data quality management practises to achieve the policy and objectives of the organisation.

All non-conformities must be eliminated before a certificate can be granted. Improvement notes are acceptable. If non-conformities cannot be closed or downgraded to improvement notes, the certificate will be withdrawn.

5.3.4 Report

The audit report shall contain sufficient information to enable a decision on the issuing of a certificate including:

- Information about the certified organisation
- An account of the investigation (such as approach, subjects investigated, time spent, audit team)
- The degree of compliance with the various requirements of DQMSR. Non-conformities shall be explained
- A summary of the most important findings, both positive and negative, with respect to the implementation and effectiveness of the management system
- A summary of the documentation from the phase 1 audit
- The final evaluation by the audit team.

The report shall be sent to the organisation audited and filed at the certification body.

A DQMSR certificate will be issued if it can be demonstrated that the DQMSR have been evaluated and they have been met.

5.3.5 Time allocation

A certification body shall have procedures for determining the time needed to perform an audit. The time for an audit is depending on:

- The size of the organisation
- The number of locations
- Involved organisation staff
- The number of products.

The certification body shall inform the organisation to be certified in advance of the required time of the audit(s).

5.3.6 Certificate

A DQMSR certificate can be issued by a certification body. The certificate will be sent to the involved organisation as a statement of conformity with the DQMSR requirements. The certificate is based on an audit of a data quality management system.

5.3.7 Validity and renewal

A DQMSR certificate is valid for a period of three years, provided yearly surveillance is performed. For surveillance the organisation shall provide written assurance that the DQMSR management system is still conforming to requirements. Particular attention will be paid to changes in the management system, changes in the standards to which compliance has been certified, or changes in the structure or management of the organisation, if relevant. Based on the written documentation the certification body shall determine whether further investigation is required. Non-conformance notes raised during a surveillance lead to a re-audit within three months.

6. Data Inspection Procedure

6.1 Introduction

Overall purpose of this chapter is to enhance data accuracy by applying this inspection procedure, for the benefit of the total industry.

The organisation is responsible for the data it synchronises through home data pools and it will assume full responsibility for providing high quality and standard compliant data.

Organisations can choose to use this inspection procedure to meet data verification requirements.

Using this chapter is voluntary i.e. can be part of commercial negotiations and it is not a prerequisite for using a GDSN certified data pool. It will facilitate acceptance of published data by data recipients. Organisations, which declare conformity with this inspection procedure, are required to fulfil all requirements that are part of this procedure.

Using this chapter is seen as a temporary solution to improve data accuracy. The implementation of an effective data quality management system is seen as a more effective and sustainable solution to the data quality challenge.

This Inspection Procedure is set up to verify the accuracy of data entered by data suppliers into the Global Data Synchronisation Network (GDSN). This procedure is managed by GS1 GDSN Inc.

Further it is recognised that organisations benefit from feedback from data recipients.

6.2 Inspection body selection

The organisation shall appoint an appropriate body to perform inspection against this inspection procedure. An appropriate inspection body is either a qualified person or department with sufficient independence within the organisation or a third party inspection body that meets the following requirements:

- Independent status / sufficient safeguards for objectivity
- Inspection body was not involved in the original measurements
- Individual inspector experience and qualifications in the field of inspections
- Relevant inspection procedures and protocols
- Monitoring and control system for the inspection processes

Such a body will inspect against this inspection procedure (or a scheme which incorporates all clauses of this inspection procedure) and will have demonstrated its competence.

If the organisation cannot or does not wish to establish an inspection body within its organisation it shall appoint a third party as inspection body. This inspection body shall be accredited against ISO/IEC 17020:1998 “General criteria for the operation of various types of bodies performing inspection”.

It is the responsibility of the organisation to verify that these requirements are met.

6.3 Inspection body staff qualification and experience

Lead inspectors must have in-depth understanding of the principle behind each measurement, measurement rules, and the required measuring equipment to perform proper inspections.

Inspectors must understand the inspection requirements, inspection procedures and protocols, use and limitations of measuring equipment, measurement rules, and those aspects that affect their work.

6.4 Scope of inspection

The organisation is responsible for defining the number of different products subjected to an inspection (the sample). The size of this sample shall be based on the procedure laid down in Annex 1. During the inspection the inspection body will review the sample size and the actual products that are part of the sample.

The scope of the inspection shall be defined between the organisation and the inspection body. The scope shall be identified in any inspection report and certificate of inspection.

The organisation may contract the inspection body to inspect issues beyond the scope of this inspection procedure, but no relevant elements of this inspection procedure shall be omitted.

6.5 Inspection preparation

Before the initial inspection, the organisation is required to review the inspection procedure and relevant reference documents.

Basis for the inspection is the data published by the organisation into the data pool and attributes as listed in the “List of GDSN Attributes to be included in data inspection” (annex 4). Therefore, the organisation should collect and make accessible all data relevant to the product sample that was published to the data pool and verify that upon inspection the most recently published data is available to the inspection body.

The data should be made available for quick reference during the inspection.

Prior to the inspection the organisation provides the inspection body with the pre-inspection documents, which include:

- Sampling justification
- Product data sheets with all product data as published into the data pool
- The data supplier’s list of measuring equipment present at the inspection site
- Inspection reports of previous inspections.

All documents should meet the requirements as mentioned in Annex 2.

The organisation and inspection body will agree on which appropriate measuring equipment is provided by the organisation to the inspection body.

It is the organisation's responsibility to ensure that during the inspection the most up-to-date edition of the inspection procedure and relevant reference documents are used.

The organisation and the inspection body agree to a suitable inspection location. The organisation ensures that the products for inspection are readily available and clearly tagged for identification, in the quantities required by the inspection procedure. The organisation provides safe and easy access to the products.

6.6 Inspection planning

The inspection will take place on a mutually convenient date, with due consideration given to the amount of work to meet the inspection procedure.

Factors that might influence the amount of work:

- The number of products
- Types of products and packaging
- The number of sites to visit
- A large, widely dispersed site
- The data supplier's preparation.

6.7 Sample identification

Each product sample must be identified with a GTIN, which must be used as a reference in inspection reports. For the aid of the inspection body additional descriptive information is provided which may be referenced in inspection reports.

If further information for sample identification is available, these identification codes must also be referenced in inspection reports.

6.8 Measuring equipment

The inspection body shall use appropriate measuring equipment during the inspections. Where applicable the "GS1 package measurement rules for data alignment for measuring product attributes" shall be followed.

Where necessary to ensure valid results, measuring equipment shall

- Be calibrated or verified at specified intervals, or prior to use, against measurement standards traceable to international or national measurement standards; where no such standards exist, the basis used for calibration or verification shall be recorded
- Be checked, adjusted or re-adjusted as necessary
- Be identified to enable the calibration status to be determined
- Be safeguarded from adjustments that would invalidate the measurement result
- Be protected from damage and deterioration during handling, maintenance and storage.

It is the organisation's responsibility to make sure that all equipment provided and used for inspection is well maintained and calibrated.

6.9 Inspection

Inspection is performed by the inspection body in line with all reference documents as mentioned in this inspection procedure as well as principles of good practise. Data is verified against the data published into the data pool.

Correct entry into the data pool is defined as: all product attribute measurements are found within tolerance ranges as defined by the GSMP Data Accuracy Group.

Organisations should aim for 100% data accuracy.

6.10 Inspection reporting

Following each inspection a written report shall be prepared in line with Annex 3. It is appreciated that sections of the report may be shortened or lengthened to meet specific reporting needs.

The report contains the following sections:

- Inspection summary
- Inspection scope
- Reference documents
- Overview of inspection findings / results / performance.

Reports are produced and despatched to the organisation within an agreed timescale. Further the inspection body provides a declaration of inspection, which the data supplier can provide to the data recipient to prove conformity.

6.11 Distribution of report

Inspection reports shall remain the property of the organisation and shall not be released, in whole or in part, to a third party, unless the organisation has given prior consent, or is otherwise required to do so by law.

Consent may be given with a consent form, or may be part of a contract. The inspection body will retain a copy of the inspection report.

The inspection report shall be stored safely and securely until the next inspection report is issued, or for a period of five years if no further inspections take place.

6.12 Appeals procedure

The inspection body shall have a documented procedure for consideration and resolution of appeals against results of inspections. Procedures shall be independent of the individual inspector and will be considered by senior management of the inspection body. Records of the review and actions arising from appeals shall be maintained.

If necessary the organisation shall facilitate additional inspections to verify and resolve the appeal.

6.13 Complaints

The inspection body will have a documented procedure for dealing with complaints received from organisations and other relevant parties. Records of the review and actions arising from complaints shall be maintained.

6.14 Corrective measures

The organisation must prove that the inspection findings are input for corrective measures. Inspection findings must result in data corrections in the data as sent to the pool.

6. Annex 1 Sampling

The following steps shall be used to determine sample sizes:

1. All trade items to which data applies which is published by the data supplier are made part of the sample population according to their GTIN.
2. The data supplier shall categorise the remaining trade items based on the following characteristics into sample groups:
 - a. Consumer (end user) trade items
 - i. Rigid packaging
 - ii. Flexible packaging
 - iii. Hanging items
 - iv. Cylindrical items
 - v. Multi-packs
 - b. Non-consumer trade items, no pallet
 - c. Non-consumer trade items, including a pallet

If more than one sample group is applicable, the data supplier shall select only one.

3. Within each sample group, a sample will be taken in accordance with the formula: $[\text{Sample} = \sqrt{n + 0.1n}]$, where n = number of articles. All items that are identical¹ count as one article.

Example of sample sizes in each sample group based on the sample formula.			
n	sample	n	sample
1	1	500	73
5	3	1000	132
10	5	1250	161
25	8	1750	217
50	13	2500	300
100	20	3500	410
250	41	4000	464

4. The data supplier will strive for the widest variation in trade items possible, based on dimensions and the packaging material code. However, it is recommended to select different trade items from the same hierarchy as much as possible.

¹ In the sense that they have a unique GTIN-GLN combination

6. Annex 2 Pre-inspection documentation requirements

Sample justification

- Total number of GTIN's 'live' in the GDSN data pool
- Overview of GTIN's considered like items
- Division of GTIN's in sample groups (include Trade Item Description for reference purposes)
- Sample size for each sample group.

Product data sheet

Data sheet for each GTIN subject to inspection with all product data as published into the data pool.

Measuring equipment

Overview of measuring equipment with relevant specifications (type, brand, serial number, etc.)

Table to indicate which product attribute will be measured with what type of measuring equipment.

Previous inspection reports

If applicable, previous inspection reports shall be made available to the inspection body, for review.

6. Annex 3 Inspection report requirements

The report contains the following sections:

1. Inspection summary
2. Inspection scope
3. Reference documents
4. Overview of inspection findings / results / performance
5. Action plan.

Inspection summary

Brief summary of the inspection which states at least: organisation reference data, number of inspected GTIN's and statement on performance in % of inspected GTIN's.

Inspection scope

- Organisation reference data (name, department/ business unit, address, contact person, etc.)
- Visited locations
- Number of GTIN's.

Reference documents

References should be made to all documents used during the inspection, including version numbers and publication dates.

Overview of inspection findings / results / performance

- Overview of all findings listed per GTIN
- Summary / conclusion with aggregated results
- Statement on performance in % of inspected GTIN's.

Action plan

- Overview of all inaccurate data for corrective measures by the organisation
- Other (additional) inspections planned to verify data accuracy.

Annexes

- Overview of inspected GTIN's and inspected packaging levels.

6. Annex 4 List of GDSN ATTRIBUTES to be included in data certification

Based on the EAN.UCC Business Requirement Document for Data Synchronisation Data Model for Trade Item, latest version (7.7.1, May 24, 2005)

Definitions:

Source line ¹	Headword	Definition
452	Trade item	A Trade Item is any product or service upon which there is a need to retrieve pre-defined information and that may be priced, ordered or invoiced at any point in any supply chain.
UN/CEFACT	Unit of measure	Indication of the unit of measurement in which weight (mass), capacity, length, area, volume or other quantity is expressed.

Attributes:

Line ¹	Item name	Definition/explanation	Applicability ²
664	GlobalTradeItemNumber	A particular Global trade item Number, a numerical value used to uniquely identify a trade item. A trade item is any trade item (product or service) upon which there is a need to retrieve pre-defined information and that may be planned, priced, ordered, delivered and or invoiced at any point in any supply chain.	All levels
768	ClassificationCategoryCode ³	Global EAN.UCC classification category code. Unique, permanent 8-digit key.	All levels
1254	TradeItemDescription ⁴	The concatenated product description of a product or service in "brand", "sub-brand", "functional name" and "variant".	All levels
4645	netContent	The amount of the trade item contained by a package, as claimed on the label.	Consumer unit

¹ From the EAN.UCC Business Requirement Document for Data Synchronisation Data Model for Trade Item, version 7.7.1, May 24, 2005

² Applicability as to the levels of the trade item hierarchy, including inner packs.

³ To be inspected for existence only, however code 99999999 is not allowed.

⁴ For information purposes only.

	netContent Unit of Measure		
4421	depth	The measurement from front to back of the consumer trade item <i>or</i> the longest side of the base of the non-consumer trade item ⁵ .	All levels
	depth Unit of Measure		
4767	width	The measurement from left to right of the consumer trade item <i>or</i> the shortest side of the base of the non-consumer trade item.	All levels
	width Unit of Measure		
4567	height	The measurement of the height of the trade item. The vertical dimension from the lowest extremity to the highest extremity, including packaging. At a pallet level the trade itemHeight will include the height of the pallet itself.	All levels
	height Unit of Measure		
4542	grossWeight	Used to identify the gross weight of the trade item. The gross weight includes all packaging materials of the trade item. At pallet level the trade itemGrossWeight includes the weight of the pallet itself.	All levels
	grossWeight Unit of Measure		
492	totalQuantityOfNextLowerLevelTradeItem	This represents the Total quantity of next lower level trade items that this trade item contains.	All levels
4163	quantityOfTradeItemsPerPalletLayer	The number of trade items contained on a single layer of a pallet. Only used if the pallet has no GTIN. It indicates the number of trade items placed on a pallet layer according to supplier or retailer preferences.	Trade item with pallet
4087	quantityOfLayersPerPallet	The number of layers that a pallet contains. Only used if the pallet has no GTIN. It indicates the number of layers that a pallet contains, according to supplier or retailer preferences.	Trade item with pallet

Note: The “GS1 Extract: General EAN.UCC Specifications, Section 6.8 Package measurement rules for data alignment” should be used for correct measurement.

⁵ Also referred to as length.

7. Definitions

Throughout this document, the following definitions apply:

Accreditation

Procedure by which an authoritative body gives formal recognition of the competence of a certification body to provide certification services, against an international standard.

Accreditation body

Agency having jurisdiction to formally recognise the competence of a certification body to provide certification services.

Audit

Systematic and functionally independent examination to determine whether activities and related results comply with a standard, whereby all the elements of this standard are covered by reviewing the data suppliers' manual and related procedures, together with an inspection of the data and the applicable products.

Auditor

Person qualified to carry out audits for or on behalf of a certification body.

Certification

Procedure by which accredited certification bodies, based on an audit or an inspection, provide written or equivalent assurance that data and where applicable their management system and its implementation conform to requirements.

Certification body

Provider of certification services, accredited to do so by an accreditation body.

GTIN

A particular global trade item number, a numerical value used to uniquely identify a trade item. A trade item is any item (product or service) upon which there is a need to retrieve pre-defined information and that may be planned, priced, ordered, delivered and or invoiced at any point in any supply chain.

GSMP

The Global Standards Management Process (GSMP) was created by GS1 and GS1 US to support standards development activity for the EAN.UCC or GS1 System. The GSMP uses a global consensus process to develop supply chain standards that are based on business needs and user-input.

Inspection

Examination of data and the applicable products, in order to verify that they conform to requirements.

Organisation

Company, corporation, firm, enterprise, authority or institution, or part or combination thereof, whether incorporated or not, public or private, that has its own functions and administration.

Note: For organisations with more than one operating unit, a single operating unit may be defined as an organisation.

Self-declaration

A formal statement by an organisation in which the organisation declares that the product data published in the data pool meets the requirements of GDSN.

8. Reference Documents

The most up-to-date version of the following documents shall be used for data quality management system audits, product measuring and inspection of data accuracy. These documents, or links to the most recently published versions, can be found at: www.gs1.org/gdsn.

- Business Requirement Document For Data Synchronisation Data Model for Trade Item (Data Definition)
- Specification of Measurement Tolerances (GSMP Data Accuracy Group)¹
- GS1 Extract: General EAN.UCC Specifications, Section 6.8 Package measurement rules for data alignment
- GTIN Allocation Rules
- GPC Published Standards.

¹ This document is under development and will be made available as soon as possible.