

**Introductory Paper**  
**for an**  
**Internal Data Alignment**  
**Roadmap**

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# 1. Introduction

Under the auspices of the GS1 GDSN Data Quality Steering Committee a MO Workgroup has been created, with the objective to provide insight how GS1 Member Organisations can leverage the Data Quality Protocol to their business communities in an as consistent as possible way. In other words, to define how MO's can pro-actively promote and support the roll-out of the DQ protocol.

In the project plan of the workgroup it is described that the activities of the workgroup consist of communication to create awareness amongst MO's, to learn to appreciate the challenges and opportunities they have in meeting the needs of their member companies, followed by the development of several tools and approaches, which MO's can actually use in providing appropriate services to their members. These services will mainly consist of:

- (Marketing) communication;
- Education (via e-learning and in class room);
- Guidelines, with concrete how-to-achieve data quality recommendations.

As part of the latter a set of guidelines and supporting documentation, developed by the Consumer Goods Council of South Africa (CGCSA) in conjunction with GS1 South Africa, is currently being evaluated by the Workgroup, to assess whether this approach should be recommended to all MO's in their support of their member companies. The name of this set is the Internal Data Alignment (IDA) toolkit The full documentation can be downloaded via the following URL: <http://196.22.212.146/www.pdcza.org/upload/ida%20toolkit%20ver1.zip>

Chris Havenga of CGCSA / GS1 SA, who is a member of the Workgroup, has expressed the willingness of his organisation to make the toolkit available for wide use by GS1 and the associated MO's.

This document is an introduction to IDA and the IDA toolkit and is to be used as the starting paper for further evaluation of the applicability of broad roll-out of the toolkit. It has been written by Chris Havenga.

Hein Gorter de Vries  
Chair of the GDSN DQ MO Workgroup  
6 March 2007

## 2. Where do IDA and the IDA Toolkit fit into the Data Quality Framework including the Data Quality Protocol?

The objective of the Data Quality Protocol is to provide the requirements and specifications that organisations must comply with when they establish, implement, maintain and improve a data quality management system and to define a standardised approach for data inspection. Requirements are listed, but an organization can do the implementation in many different ways.

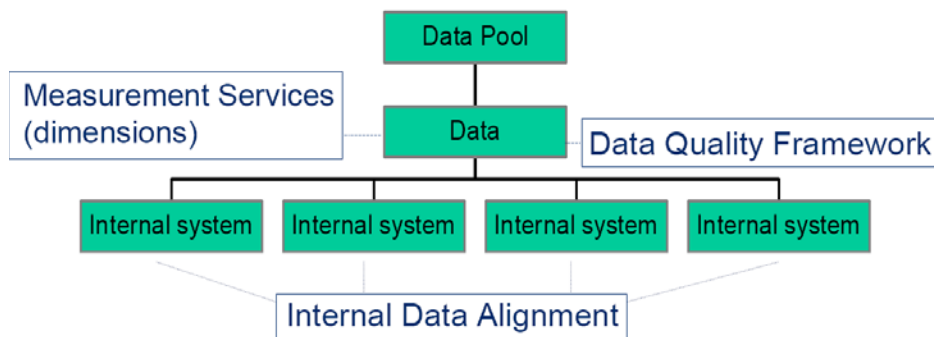
Therefore a document “Implementing the Data Quality Framework including the Data Quality Protocol” was created that provides implementation guidance so that organizations can implement the Data Protocol in an organized and practical manner.

The implemented data quality management process should provide for the management of master data that is sustained in terms of being complete, consistent, accurate, time stamped and industry standards based.

Establishing an Internal Data Alignment System is a specific way of achieving data quality. It starts with Data Consistency, but also addresses all the other data quality components: namely completeness, accuracy, time stamped and industry standards based.

The reason for an IDA system is that the consistency of data is many times overlooked or underemphasized and eventually jeopardizes the operation of the Data Quality Management System. Consistency of data is also omitted because it normally opens up a “can of worms” and could result in business process changes and possibly, as a consequence, a change in systems.

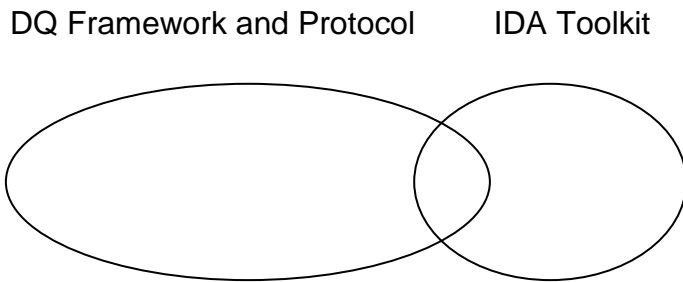
The position of IDA, regarding the Data Quality Framework and Protocol is depicted in the following figure.



The implementation of an IDA system will ensure that quality data is aligned across internal systems and used in the data management system.

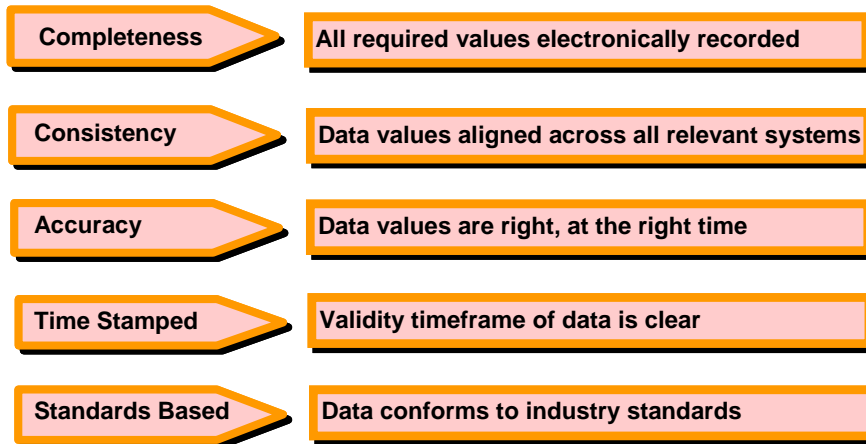
The IDA Toolkit does not make provision for implementation of a data quality management system, but it provides for a detailed methodology to follow, in order to achieve aligned data quality that starts with Data Consistency but ends with sustained quality master data.

The IDA Toolkit addresses many data quality aspects that could be shared or elaborated on by using the DQ Framework and Protocol, as depicted below:



### 3. Introducing the IDA Toolkit

Good quality data is foundational to collaborative commerce and global data synchronization. Good quality data means that all master data is available in a complete, consistent, accurate and time-stamped manner, based on industry standards as depicted below:



By improving the quality of data, trading partners reduce costs, improve productivity and accelerate speed to market. The most important prerequisite to the exchange of high quality of master data between trading partners is, that the source of the data (generally the supplier) has its data internally aligned and organised in an appropriate manner. The receiver of the data (generally the retailer/wholesaler) must be able to process these supplier data without modifying them (although attributes and classification codes may be added, if deemed appropriate in their internal processes).

#### 3.1. Obstacles to internal data alignment

Logical and desirable it may seem, in almost all companies IDA has not been achieved, for various reasons:

- There is little or no understanding of the issue.
- There is no clear business accountability.
- It is seen as an IT issue only.
- Management is reluctant to address the issue, being afraid of a “can of worms”:
  - Where to start?
  - What is involved?
  - How to do it?
- There are only a few Best Practice documents available, but these are
  - At a high level only
  - And contain no real implementation templates.

Lack of IDA causes great confusion about data ownership:

- The same data are being stored across multiple systems and functions.
- These systems are not properly interconnected.

Examples of what this could result in:

- High numbers of credit notes due to data errors.
- Rework of documentation
- Unacceptable % of out-of-stocks
- High item set-up and maintenance effort

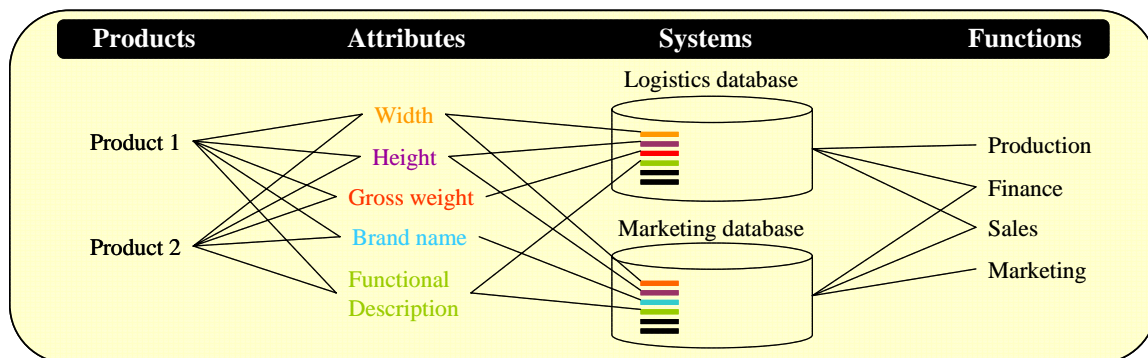
Internal Data Alignment (IDA) is the process of aligning internal functions and systems across a business, physically and/or procedurally, such that all master data regarding trade items within a company are of good quality, as described above. IDA is fundamental for high quality master data alignment between different companies, to avoid “garbage in => garbage out”.

### 3.2. A toolkit to achieve optimal IDA

The IDA Toolkit, as part of the global GSI drive for Data Quality, focuses on Data Consistency, but also addresses all the other data quality components of the diagram above. The IDA Toolkit provides a methodology for any business to determine the following:

- An assessment of the current data use and alignment between functions and systems
- how data alignment should look like,
- what should be done about it,
- how to implement the data landscape changes,
- what processes to implement to assure data consistency,
- how to clean current data and to sustain a interconnected system with clean, high quality data.

By implementing the IDA Toolkit, the goal is to achieve Internal Data Alignment. This is achieved when data that is used by multiple functions and resides in more than one business system or database, matches from one system to another and when the information is compliant with the definition of quality data (complete, consistent, accurate, time-stamped and industry standards-based).



## 4. What the IDA Toolkit Provides

The IDA toolkit is based on a consistent process methodology, which is to be followed in order to achieve sustainable Internal Data Alignment of systems. It consists of the following supporting materials:

- an introduction document to IDA
- a document on how to use the IDA Toolkit
  - it also contains sections on a Project Work Plan Framework, Change Management and Case Study Learning
  - These refer to templates for Change and Risk Management
- templates that can be used during certain stages of the methodology, to capture data and to enable data evaluations
- Examples of completed templates
- Supporting documents, giving guidance on typical project times and resources
- A guidance document that can be used during the last phase of the methodology which provides:
  - an overview of possible technologies to support an internal data alignment initiative
  - an overview of typical system environments in the CPG industry (Consumer Packaged Goods)
  - system solution possibilities
- the IDA Toolkit Document – detailing the complete methodology to follow, in order to achieve sustainable IDA systems.

## 5. IDA Preparation

### 5.1. How to start: create general awareness about IDA

Implementing data quality affects the entire organisation right from the start. If pursued with dedication, it results in a cultural transition towards an atmosphere of continual improvement. But a general awareness of IDA is needed from top management, as well as the people working with data. To realise what IDA is and what will be forfeited in terms of business's, by not embarking on an IDA implementation.

The IDA Toolkit's IDA Introduction Document can be handed out and is suitable for reading by top management, as it is concise and addresses the whole IDA scenario.

The IDA Toolkit's IDA Introduction Document covers:

- Familiar organisation issues
- What the typical data alignment scenario in companies look like
- What is IDA
- Obstacles to IDA
- Issues of non-alignment of data
- Where do I start
- What is the IDA Toolkit
- What does the Toolkit provide
- IDA phases, as covered by the IDA Toolkit

## **5.2. IDA Pre-Implementation Requirements**

Because of the impact of an IDA implementation project, awareness itself is not sufficient to start the project. First a number of pre-implementation requirements need to be met.

### **5.2.1. Top Management Commitment**

Top management (managing director or chief executive) should demonstrate their commitment and determination to implement IDA, as part of a data quality management system in the organisation. Without top management commitment, no data quality initiative can succeed. Top management must be convinced that IDA will enable the organisation, to improve overall business efficiency that will realise supply chain savings.

Top management should provide evidence of its commitment to the data landscape assessment and subsequent implementation of IDA, as the IDA implementation could impact on the business, in terms of business process redefinition and possibly changing and/or adding systems. Top management could commit by:

- Communicating to the organisation, the importance of meeting the requirements of IDA and other GS1 and customer requirements,
- Adding IDA to the organisation's data quality policy and make this known to every employee,
- Ensuring that IDA objectives are established at all levels and functions (which are a part of any normal data quality objectives),
- Ensuring the availability of resources required for IDA assessment and implementation,
- Appointing a management representative to coordinate IDA activities (could be the same person that coordinates data quality management system activities), and
- Conducting management review.

The top management should identify the goals to be achieved, through the IDA implementation and document these. Typical goals should be:

- Establish the real data landscape and its inefficiencies
- Establish the real cost of data management
- Solve confusion about data ownership
- Data consistency across all systems in a sustainable way
- Not to be outperformed by competitors with well interconnected systems, versus your own low quality and out-of-date data
- Reduce high item set-up and maintenance effort
- Be more efficient and profitable
- Produce products and services that consistently meet customers' needs and expectations
- Increase confidence in the production system
- Reduce rework, costs and liabilities
- Achieve customers satisfaction
- Increase market share

This information should be accessible to all employees and other relevant parties.

### **5.2.2. Appoint responsible manager(s)**

IDA is done by people. The first phase of implementation calls for the commitment of top management. The next step is to appoint a manager or managers who will be responsible for implementing and operating the IDA system (if a data quality system is in place, it could be the same person that managed the data quality implementation). Please remember that IDA is merely making the data quality system complete.

The manager is the person within the organisation who acts as the interface between the organisations management and operations. The manager should also act as the organisation's "data quality management system champion," and must be a person with:

- Total backing from the CEO,
- Genuine and passionate commitment to quality in general and the data quality management system in particular,
- The authority - resulting from rank, seniority, or both - to influence managers and others of all levels and functions,
- Good knowledge of data quality,
- Good knowledge or access to good knowledge of the data systems being used in the organisation.

### 5.2.3. Awareness Programmes

IDA awareness programmes should be conducted (this could be part of general data quality) to communicate the aim of the IDA implementation / system to all employees, who will be affected. The advantage it offers to employees, customers and the organisation; how it will work; and their roles and responsibilities within the system.

The awareness programme should emphasize the benefits that the organisation expects to realise through its IDA system, as part of the data quality management system. The programmes could be run either by the implementation team or by experts hired to talk to different levels of employees.

## 5.3. Start a formal IDA Implementation Project

Under leadership of the appointed manager, start a formal IDA Implementation project. To determine the project scope is not that easy, because the scope can vary during the major phases of the project and could be changed by results of the process steps within the phases.

It is advised to divide the project into the major phases, namely *Evaluation*, *Analysis* and *Implementation*. After each phase an assessment of the scope of the next phase is advised.

Main drivers of the scope will be:

- Number of Data Attributes
- Number of Systems involved
- Number of Functions involved
- Number of Products involved

A project plan should be drawn up that stipulates steps to be taken, resources, deliverables, communication and feedback, etc. Top management should participate and the benefits and scope of the IDA project should be well understood by them. Resources from Business and IT are required. This is necessary even if the whole project is subcontracted to external consultants.

### **5.3.1. Project Preparation**

The success of any project depends on how well the communication channels have been set up and the buy in of all the stakeholders. Before the IDA Project is formally started, the following project preparation steps should be addressed:

- Project approval and buy-in of all the stakeholders from board level, through the organization.
- Communication, of the project and a clear understanding of the deliverables that are expected, to all effected staff is crucial. Communication channels set up and buy in of all the stakeholders, are very important and it is advisable to have a project initiation workshop, where all possible stakeholders are present. The method and objectives of the Project should be communicated and questions / unclear issues should be addressed.

## **5.4. Provide Training**

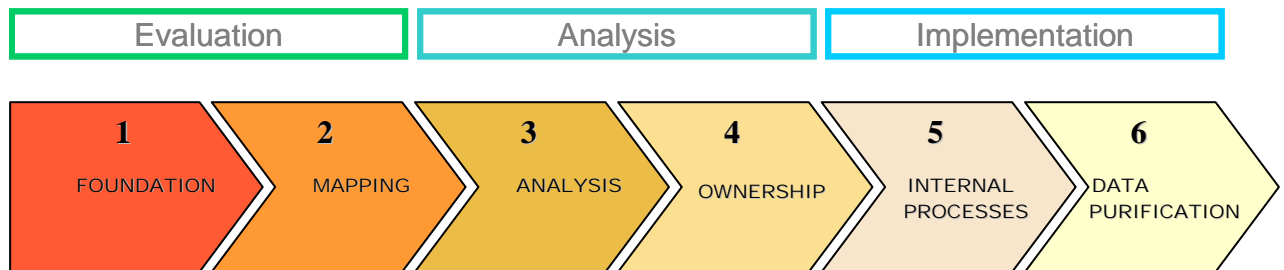
Since Internal Data Alignment affects many areas in the organisation, training programmes should be devised for different categories of employees. The IDA implementation plan should make provision for this training. This should be done as part of Step 5 of the Implementation phase of the IDA project.

The training should cover the basic concepts of IDA and the overall impact on the strategic goals of the organisation, the changed processes, and the likely work culture implications of the system. In addition, initial training may also be necessary on writing or including IDA in data quality manuals, procedures and work instructions; auditing principles and testing procedures, etc.

## 6. IDA Implementation

### 6.1. IDA Implementation Phases and Steps

The IDA implementation process is broken down in three phases namely Evaluation, Analysis and Implementation. Each phase, in turn, is broken down in steps as depicted below.



### 6.2. IDA Detailed Implementation

The methodology steps in the IDA Toolkit Document are followed for the IDA implementation. The IDA Toolkit Document will point (with hyperlinks) to all required templates and supporting documents.

Each step to be followed in the document is first summarized with:

- An overview,
- Objective and
- Sub-action steps to be followed.

Each step and sub steps list in detail, what to do and in many case are explained by an example.

The detailed steps are summarized as follows:

**Evaluation Phase** – where the information is gathered about the business and its data.

Major steps are:

**1 Foundation** – the overall picture of the data attributes, systems and functions are investigated.

**2 Mapping** – a view of the relationships between data attributes, systems and functions is created.

The steps, broken down in sub steps in the IDA Toolkit Document will detail the following:

#### **Step 1: Foundation**

- Define and create a master list of product data attributes for the project.

- Create a master list of products for which the data will be aligned in this project.
- Develop a model that represents and describes the functions of the business.
- Develop a model that represents and describes the systems used in the business.

***Step 2: Mapping***

- Put together the Systems Data Map Template.
- Map data attributes against system for each function.
- Collect data extracts from formal and informal systems – for use in the next phase.

**Analysis Phase** – where information, gathered during the Evaluation Phase, is used to create a true reflection of the total data landscape of the business.

Major steps are:

3 *Analysis* – the current data situation is assessed and the next required steps are determined.

4 *Ownership* – the current data owners and users of data are determined and decided who they logically should be.

The steps, broken down in sub steps in the IDA Toolkit Document will detail the following:

***Step 3: Analysis***

- Compare Systems Data Maps and Product Data Extracts, eliminate differences and consolidate.
- Determine whether all required data attributes exist and whether data specifications have been met.
- Assess current data alignment status.
- Identify ‘Master’ system for each attribute.

***Step 4: Data Ownership***

- Sort the systems in a time-line from first populated with data to last populated.
- Consolidate data attributes by the systems in which they exist and which functions are the primary users of the systems.
- Verify the list of data attributes with each logical data owner and business function.

**Implementation Phase** – where something is done in order to change the data landscape such that Internal Data Alignment is in place and sustained.

Major steps are:

*5 Internal Processes* – appropriate processes for data alignment are created across the business.

*6 Data Purification* – ensuring that clean data with Internal Data Alignment processes and systems are in place.

The steps, broken down in sub steps in the IDA Toolkit Document will detail the following:

***Step 5: Internal Processes***

- Identify an overall owner for master data management processes.
- Consider reducing the data across systems.
- Determine integration and process enhancement possibilities.
- Perform an Implementation Feasibility Study.
- Decide what to implement to facilitate Internal Data Alignment.
- Implementation of Systems, Processes, Data Flow and Ownership.
- Align current business processes with the solution implementation.
- Ensure that functional responsibilities are aligned with the business processes.
- Define Key Performance Indicators to monitor Internal Data Alignment.

***Step 6: Data Purification***

- Determine data purification requirements.
- Implement Data Purification mechanisms.
- Maintain purified data via changed business processes and systems.
  - Continual improvement, training, etc.