Data Quality Management System - Framework

Requirements for a DQMS

Introduction

This document describes requirements that can be imposed on a data quality management system (DQMS). This document meets the need for a standard in the field of data quality management. Every organization has its own data quality management system. This framework describes the requirements that such a system could meet.

Context of a data quality management system

Data is managed by means of a data management system. A distinction can be made between three subsystems:

1. Information Security Management System (ISMS) & Privacy Information Management System (PMS)
2. Data quality management system (DQMS)
3. Data utilization management system (DUMS)

Figure 1: Three main areas of data management

There is a common standard for information security management systems: ISO 27001.

There are legal requirements for privacy protection, which vary depending on the region. For the European Union, this is the General Data Protection Regulation.

There is currently no standard for a management system for data quality. This document aims to provide one.

Usually there is an intent to utilize available data eventually. To do so, it is necessary that information security and data quality are sufficient (a prerequisite). There is currently no standards framework for the utilization of data .

Data Quality Management System (DQMS)

Objectives of a DQMS

The objectives of a DQMS are twofold:

- The quality of the data meets the set requirements.
- The users of the data are satisfied with the quality of the data.

Elements of a data quality management system

A management system consists of elements. Together, these elements form the management system. Together, the elements contribute to achieving the objectives of the DQMS. See Figure 2 for the elements of the DQMS.
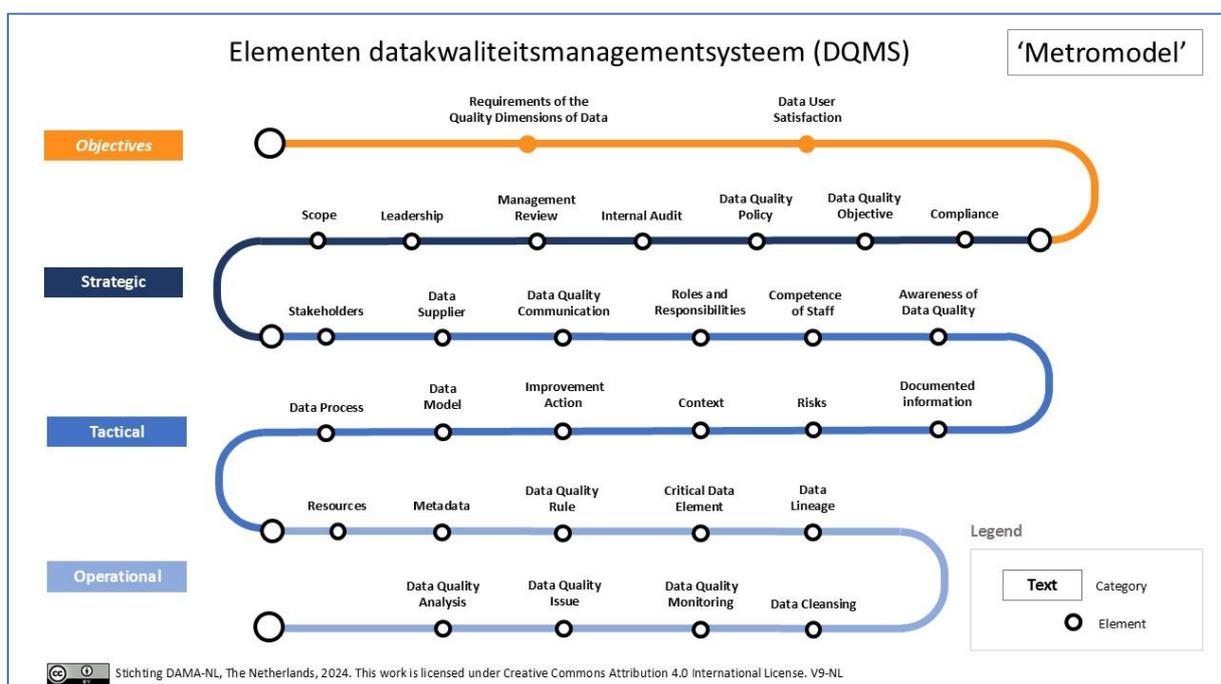
Figure 2: Elements of the DQMS

Generic application

The standards framework for DQMS has been designed in such a way that it can be applied in all organizations (generic). It is not specific to profit or non-profit organizations or certain industries.

Standards framework for a DQMS

Introduction

The standards framework sets requirements for a DQMS. The main structure of the standards framework is derived from the ISO standards for management systems, such as ISO 9001 Requirements for quality management systems and ISO 27001 Requirements for information security management systems.

Main structure of the standards framework

The standards framework is made up of chapters, each of which deals with an element of the DQMS. These chapters describe the requirements that are set for each element.

Structure of a chapter

A chapter consists of the following sections:

- Definitions of terms used. These definitions are normative, i.e. the defined terms cannot be interpreted freely.
- Procedural requirements
- Other requirements
- Notes

Definitions

Where possible, definitions refer to www.datamanagement.wiki. This wiki contains definitions that comply with ISO 704 Terminology work — Principles and methods.

Procedural requirements

A procedural requirement is that the entire life cycle of an element is completed and that it is clear what, who, when, and how each step in the life cycle is carried out. Each element goes through a Plan Do Check Act cycle. Completing all steps is referred to as managing an element.

The what, who, when, and how questions can be explained as follows:

What	What is the action? For example, planning, recording, applying, checking, evaluating, archiving, destroying.
Who	Who carries out the action? This can be a function, role, department, or person.
When	The time or period in which the action must be carried out. For example, on January 1 of each year or monthly. It can also mean under what conditions an action is carried out.
How	How is an action carried out? For example, using instructions, a form, a checklist, a tool, or an application.

These questions can be put into a diagram as shown below. This diagram is not prescriptive. It is the content that matters.

Procedure for managing element X

What	Who	When	How
Step 1	Function A	Daily	Using application C.
Step 2	Function B	Once step 1 has been completed.	Using checklist 2.

The tables in the chapters for each element are partially pre-filled. This is primarily intended as a starting point.

Other requirements

The standards framework may also impose non-procedural requirements on an element, for example, an internal auditor must be independent and impartial.

Data quality dimensions

Data quality has a large number of dimensions, such as accuracy, completeness, and timeliness. The standards framework does not determine which dimensions are important for an organization. For definitions of data quality dimensions, please refer to www.datamanagement.wiki.

Implementation order

The standards framework does not describe the order in which the elements of the DQMS should be implemented. However, it is common practice to first assess the extent to which the organization already complies with the standards framework (baseline measurement) for all elements.

It can then be determined which improvements are still needed. These areas for improvement can be implemented in your own order of priority.

The data quality maturity scan, which can be found on the dama-NL.org website, can be used as a tool for this purpose.

Management of the standards framework

Stakeholder committee

The standards framework is managed by the DAMA-NL DQMS Committee, which consists of stakeholders. The Dutch technical agreement NTA 8813 applies to the management of the standards framework ('scheme'). This agreement sets requirements for the development and management of schemes for conformity assessment by independent scheme managers.

Releases of the standards framework

The standards framework is revised every five years. Certified organizations are given two years to adapt their DQMS to the latest release.

Certification and accreditation

The standards framework enables organizations to have their data quality management system certified. It is recommended that a certifying body (external auditor) with which DAMA-NL has an agreement be engaged for this purpose.

This body must comply with the NEN-EN-ISO/IEC 17021-1:2015 standard: Conformity assessment – Requirements for bodies providing audit and certification of management systems – Part 1: Requirements.

The value of the certificate is greater if this certifying body is also accredited by the Dutch Accreditation Council for this standards framework.

At present (September 2024), there are no accredited certification bodies in the Netherlands for the DAMA-NL DQMS Standards Framework.
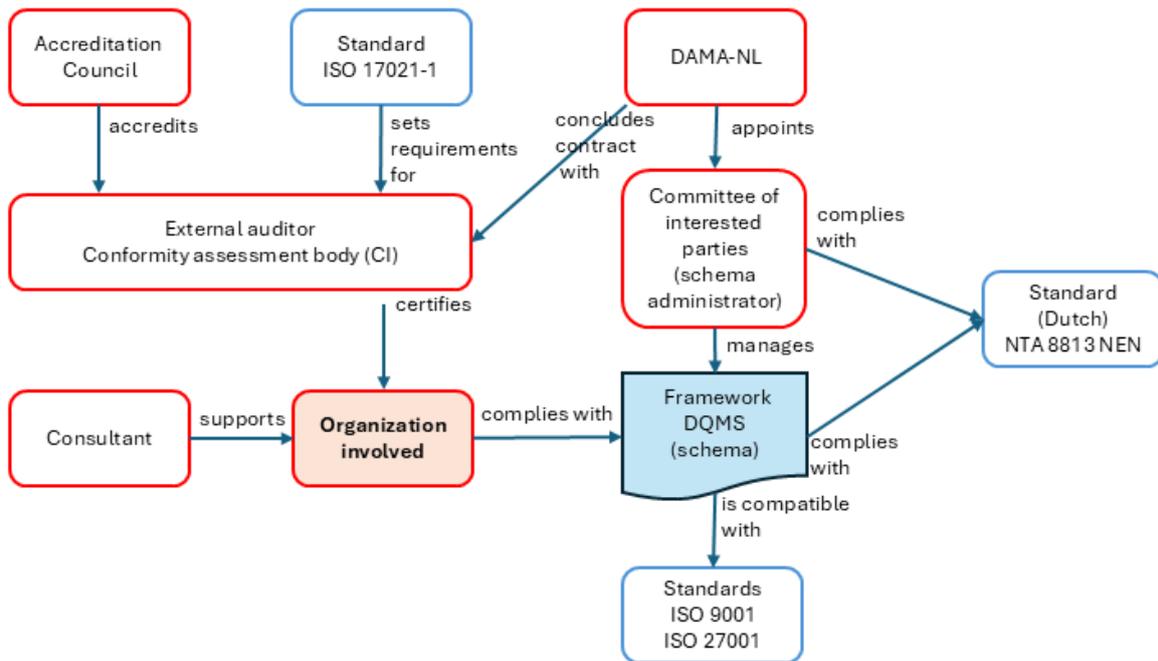
Figure 3: Relationship between certification and standards framework

Appendix: Requirements for a DQMS

This appendix lists the requirements for the elements of a DQMS.

1.   Scope of DQMS

Introduction

Scope refers to the organization or parts thereof to which the standards framework is applied. This is relevant for all stakeholders to know.

Definition

*   Scope [Data Management Wiki]

Procedural requirements

The following procedure is followed for managing the scope.

What	Who	When	How
Prepare		One-time	
Adopt	Resonsbile at mamanagent level		
Inform stakeholders			
Evaluate			
Adjust			

Other requirements

*   The legal entities that fall within the scope of the DQMS have been specified, including their Chamber of Commerce numbers. This is relevant in the event of certification.
*   It has been determined whether the scope is limited to the data of a department, data from a process or data collection, or whether it concerns all data within a legal entity (NV, BV, foundation, etc.).
*   The scope text summarizes in one sentence which data falls within the scope. This sentence is intended for inclusion on the certificate.

Notes

*   Example of a scope text: "Managing the quality of the data processed in the sales process."
*   Scope and field of application are synonyms.

2. Management review

Introduction

In the management review, management assesses the effectiveness of the DQMS, makes decisions, and formulates actions to improve the DQMS.

Definitions

- Management review [Data Management Wiki]
- Data quality policy [Data Management Wiki]
- Internal audit [Data Management Wiki]
- Context [Data Management Wiki]
- Data quality objectives [Data Management Wiki]
- Stakeholder analysis [Data Management Wiki]
- Data quality risk analysis [Data Management Wiki]

Procedural requirements

The following procedure is followed for managing a management review:

What	Who	When	How
Planning and preparation		At least once a year	
Implement	Management		
Compiling report			
Distribute report			To all stakeholders and action holders.
Implement actions and decisions	Action holders	Within the timeframe specified by management.	

Other requirements

- The management review is carried out by the management team which has final responsibility for the part of the organization that falls within the scope of the DQMS.
- The input for the management review consists of:
    - Report of previous management reviews
    - The data quality policy
    - Results of internal and external audits
    - The extent to which the data quality objectives and numerical targets have been achieved (objectives)
    - Evaluation of actions arising from the risk analysis (risk analysis)
    - New or proposed legislation or regulations (context analysis)
    - Performance of external providers and suppliers (supplier evaluation)
    - Changing needs and expectations of stakeholders (stakeholder analysis)
    - Changes in 'strengths and weaknesses' and 'opportunities and threats' with regard to data quality (context analysis)
- The output of the management review consists of:
    - Management review report as documented information with decisions and actions
    - Any adjustments to the data quality policy

- o Follow-up of the audits
- o Adjustment of the objectives
- o Actions to achieve objectives that have not been met
- o Actions based on the risk analysis
- o Actions in response to changes in legislation and regulations
- o Actions in response to supplier evaluations
- o Actions in response to changed needs and expectations of stakeholders
- o Actions in response to changes in weaknesses and threats
- A management review is conducted at least once a year.

Notes

- The management review may also be spread throughout the year and carried out as part of a regular management meeting.
- The management review is carried out by senior management.

3. Data quality policy

Introduction

The data quality policy describes an organization's intentions with regard to data quality. It provides guidance for all activities in the field of data quality.

Definitions

- Data quality policy [Data Management Wiki]
- Stakeholder [Data Management Wiki]
- Overview data quality dimensions [Data Management Wiki]

Procedural requirements

The following procedure is followed for managing the data quality policy:

What	Who	When	How
Draft			
Adopt			
Publish/Distribute			
Assess consistency between policy and other elements of the DQMS			
Modify DQMS			
Evaluate the policy itself		Annually	
Adjusting policy		Annually	

Other requirements

- All stakeholders must be able to take note of the data quality policy.
- The data quality policy specifies which data quality dimensions are important to the organization.
- The data quality policy outlines how the organization intends to achieve the required data quality.
- The data quality policy describes which laws and regulations applicable to the organization with regard to data quality.

Notes

- None

4. Critical Data Elements

Introduction

The selection of critical data elements is intended to focus data quality management on the data elements that matter most.

Definitions

- Critical data element [Data Management Wiki]
- Data element [Data Management Wiki]
- Documented information [Data Management Wiki]

Procedural requirements

The following procedure is followed for managing critical data elements:

What	Who	When	How
Collect data elements that are eligible for selection.			
Determine a method for selection			
Select			
Establish and record			
Communicate to stakeholders			
Use/Apply			
Evaluate		At least annually	
Adapt			

Other requirements

- The method for selecting critical data elements is recorded as documented information.
- The critical data elements that have been selected are recorded as documented information.

Notes

- Data elements are typically separate fields in a database or file. However, if large amounts of data are involved, data collections/files may be used instead.
- The number of critical data elements is chosen by the organization itself.

5. Improvement actions

Introduction
Improvement actions relate to improving the DQMS.

There are several types of improvement actions:
- Corrections
- Corrective measures
- Preventive measures
- Improvements

Definitions
- Improvement action [Data Management Wiki]
- Correction [Data Management Wiki]
- Corrective action [Data Management Wiki]
- Preventive action [Data Management Wiki]

Procedural requirements
The following procedure is followed for managing improvement actions:

What	Who	When	How
Determine			
Record			In an improvement register as documented information.
Plan			
Monitoring the planning			
Implement			
Evaluate effectiveness			
Archiving			

Other requirements
- Improvement actions are formulated according to the SMART principle, i.e. Specific, Measurable, Acceptable, Realistic, and Time-bound.

Notes
- Improvement actions may arise from managing
  - context,
  - risks,
  - internal and external audits,
  - customer satisfaction,
  - objectives,
  - laws and regulations,
  - monitoring data quality and
  - data quality issues.
- It is not a requirement to maintain a single improvement register.

6. Data quality rules

Introduction
Data quality rules are intended to test whether a data element meets certain requirements.

Data quality rules can be used for the following purposes:
1. Validating and modifying data so that it always complies with the rules.
2. Identifying a data issue.
3. When mapping data quality and measuring whether data meets certain quality objectives.
4. For data cleansing, to determine which data is eligible for cleansing.

Definitions
- Data quality rule [Data Management Wiki]
- Data cleansing [Data Management Wiki]
- Data quality objectives [Data Management Wiki]
- Data element [Data Management Wiki]
- Data quality analysis [Data Management Wiki]
- Metadata [Data Management Wiki]
- Critical data element [Data Management Wiki]
- Overview data quality dimensions [Data Management Wiki]

Procedural requirements
The following procedure is followed for managing data quality rules:

What	Who	When	How
Determining the scope of the data quality rules			
Specifying data quality rules			
Establishing data quality rules			
Documenting data quality rules as metadata			
Publishing data quality rules for stakeholders			
Testing data quality rules			
Implementing data quality rules			
Evaluate data quality rules			
Modify data quality rules			

Other requirements
- Data quality rules are unambiguous and not open to multiple interpretations.

Notes
- There are several possible criteria for selecting data quality rules:

- o Critical data elements
- o Relevant data quality dimensions
- o Categories of data quality rules. See the wiki for possible categories.

7. Data quality issues

Introduction

The purpose of managing data quality issues is to resolve problems with individual data items and, where possible, prevent them from occurring.

Definitions

- Data item [Data Management Wiki]
- Data quality issue [Data Management Wiki]
- Correction [Data Management Wiki]
- Preventive action [Data Management Wiki]
- Corrective action [Data Management Wiki]
- Data quality rule [Data Management Wiki]

Procedural requirements

The following procedure is followed for managing data quality issues:

What	Who	When	How
Reporting data quality issues			Via a form
Registering data quality issues			
Analyzing data quality issues			
Correcting data quality issues ('corrections')			
Reporting data quality issues as resolved			To the reporter.
Determining whether data quality issues can be prevented ('corrective measures')			
Implement corrective measures			

Other requirements

- Requirements have been set for what is recorded about a data quality issue.

Notes

- An incident management system can support the management of data quality issues.
- Data quality issues may be a reason to adjust data quality rules.
- Data cleansing involves cleaning up multiple data items at the same time rather than issues with individual data items.

8. Risks

Introduction

The purpose of risk management is to take any necessary measures to reduce the risk level to an acceptable level. This concerns the risk that the objectives of the DQMS will not be achieved.

The objectives of the DQMS are to ensure that
1. data quality meets the set requirements and
2. the users of the data are satisfied.

Definitions
- Risk [Data Management Wiki]
- Data quality risk analysis [Data Management Wiki]

Procedural requirements

The following procedure is followed for managing risks:

What	Who	When	How
Identify risks (threats)			
Determine measures already taken			
Assess risks and determine risk level			Method X
Determine additional measures			
Implement additional measures			
Evaluate additional measures		After implementation	
Adjust additional measures			

Other requirements
- The risk level is calculated using the formula probability x impact.
- A threshold has been set for the risk level. If the risk level exceeds this threshold, additional measures are required or the risk level is accepted with justification.
- Additional measures have an owner and a planned end date.
- There is a classification system for probability and impact, so that it is clear which criteria a score must meet.

Notes
- Risks are situations or events that could threaten the objectives of the DQMS.
- Data quality depends on certain 'entities', or these 'entities' influence data quality. The following categories of entities can be considered: people, equipment, software, processes, suppliers. Untested software, for example, is a threat.
- Additional measures may also be measures that have already been planned.

Below are examples of components in a risk analysis:

1. Entity
2. Threat associated with the entity
3. Measures taken
4. Probability of a threat occurring
5. Impact of a threat that has occurred.
6. Risk level
7. Measures still to be taken
8. Owner of the measures still to be taken
9. Planned end date
10. Evaluation of the effectiveness of all measures
11. Possible adjustment of the measures

9. Data quality objectives (KPIs)

Introduction
The purpose of managing data quality objectives is to focus on data quality using indicators.

Definitions
- Data quality objectives [Data Management Wiki]
- Corrective action [Data Management Wiki]

Procedural requirements
The following procedure is followed for managing data quality objectives:

What	Who	When	How
Select data elements			
Determine quality indicators for these data elements			
Determine the measurement method or measurement procedure for these indicators			
Establish standards			
Measure the indicators			
Test the measurement results against the standards			
Take corrective measures if the standards are exceeded			

Other requirements
- Data quality objectives are based on quality requirements.

Notes
- When selecting data elements, it is advisable to take into account the list of critical data elements.
- Data quality can also include data quality dimensions such as timeliness and punctuality, which relate to the data processing process and not to the values of the data itself (intrinsic data quality).
- Indicators can relate to the output but also to the input of the data processing process.

10. Data suppliers

Introduction

The purpose of managing data suppliers is to ensure that the data quality at the input side of the process meets the requirements.

Definitions

- Data supplier [Data Management Wiki]

Procedural requirements

The following procedure is followed for managing data suppliers:

What	Who	When	How
Select			
Evaluate			Based on data delivery agreement and registered deviations.
Discharge			

The following procedure is followed for managing data delivery agreements.

What	Who	When	How
Draw up/amend		At the start of delivery or after evaluation.	
Check against actual deliveries			See procedure for managing deviations
Evaluate			

The following procedure is followed to manage deviations between the data delivery agreement and the actual data deliveries.

What	Who	When	How
Observe			
Record			
Communicate			
Discuss/Provide feedback			
Correct		If possible	
Prevent	Data supplier		

Other requirements

- The quality requirements must be clearly specified in the data supply agreements.

Notes

- The quality of data deliveries can relate to both the timeliness and punctuality of the data deliveries and dimensions such as the accuracy and completeness of the data itself.
- Data suppliers can also be internal parties, for example, if one department supplies data to another department.

11. Leadership

Introduction

The managers with the highest seniority take the lead.

Definitions

- [Leadership [Data Management Wiki]](#)

Procedural requirements

- None

Other requirements

- Senior managers take responsibility for the effectiveness of the DQMS and encourages employees to contribute to this.
- Senior managers support middle and lower management in demonstrating leadership within their areas of responsibility with regard to data quality.
- Senior managers communicate the importance of data quality.
- Senior managers promote the improvement of data quality to the required level.

Notes

- The role of management is also reflected in the following elements:
    - Management review
    - Data quality policy
    - Data quality objectives
    - Resources
    - Risk

12. User satisfaction

Introduction

User satisfaction is one of the objectives of the DQMS.

Definitions

- Data user satisfaction [Data Management Wiki]
- Data user [Data Management Wiki]

Procedural requirements

The following procedure is followed to manage user satisfaction:

What	Who	When	How
Measure		At least annually	
Analyze			

Other requirements

- The output of the procedure consists of improvement actions and input for the procedure for managing improvement actions.

Notes

- Users can be both internal and external users.
- User satisfaction can be measured both qualitatively and quantitatively.
- Ways to measure user satisfaction include surveys and evaluation interviews with users.

13. Resources

Introduction

Resources are needed to develop, implement, and maintain the DQMS.

Definitions

- Resources [Data Management Wiki]

Procedural requirements

The following procedure is followed for managing resources:

What	Who	When	How
Make available	Managers		

Other requirements

- The resources must be sufficient in terms of both quantity and quality.
- The available resources are formally established (budget, staffing).

Notes

- Resources refer to human resources and financial resources, but also resources such as IT resources, facility resources, and communication resources.
- Human resources include all functions and roles that apply in the DQMS, including internal and external auditors.

14. Legislation and regulations

Introduction

Laws and regulations may relate to data quality, for example the retention period for data.

Definitions

- Compliance [Data Management Wiki].

Procedural requirements

The following procedure is followed for managing laws and regulations:

What	Who	When and how
Analyze which laws apply		
Analyze compliance		
Compliance	Management	
Monitor		

Other requirements

- The data quality requirements arising from legislation and regulations are laid down in writing (documented information).
- Unmet requirements lead to corrective action.

Notes

- None

15. Metadata

Introduction
Metadata is necessary to understand the meaning of data.

Definitions
- Metadata [Data Management Wiki]
- Defining metadata [Data Management Wiki]
- Entity type [Data Management Wiki]
- Data element [Data Management Wiki]
- Data element specification [Data Management Wiki]
- Data type [Data Management Wiki]
- Data quality rule [Data Management Wiki]
- Format [Data Management Wiki]

Procedural requirements
The following procedure is followed for managing metadata:

What	Who	When	How
Describe			
Disclose			
Utilize			
Evaluate			
Adapt			

Other requirements
- Data elements and entities have a name.
- Metadata consists of at least definitions of the data elements and entities (entity types).
- Metadata is accurate, complete, unambiguous, and clear.
- A connection has been established between metadata and technical names used in software, files, or databases.

Notes
- One way to describe metadata is as follows:
  - Name the parent concept.
  - Specify how the concept differs from other parent concepts.

  For example: Date of birth (concept) is the date (superordinate concept) on which a person was born (specification).
- One of the dimensions of data quality is the extent to which data matches the metadata.
- It is possible to further specify data elements: data type, format, data quality rules, origin of the data element, etc.

16. Internal audit

Introduction

The purpose of an internal audit is to assess compliance with the standards framework.

Definitions

- [Internal audit [Data Management Wiki]](#)

Procedural requirements

The following procedure is followed for managing internal audits:

What	Who	When	How
Plans			
Execute			
Report			See below: procedure for managing audit reports.
Evaluate working method			
Adjust working method			

The following procedure is followed for managing an audit report:

What	Who	When	How
Compile		After completion of the internal audit	
Approve	Client		
Modify			
Discuss			In management review.
Follow up		Within the foreseeable future.	
Archive			

Other requirements

- The output of the internal audit management procedure consists of an audit plan and an audit report.
- The audit plan contains the standards that will be assessed (audit criteria) and the period in which it will be carried out.
- The audit report compares the standards that have been assessed with the actual observations that have been made. It also assesses whether the standard has been met and makes any proposals for improvement actions. See the improvement action element.
- Internal audits are performed by persons who are independent of the DQMS.
- An audit plan is always available for the next internal audit.

Notes

- None

17. Context

Introduction

The purpose of the context analysis is to identify known issues with data quality.

Definitions

- Context [Data Management Wiki]
- Context analysis [Data Management Wiki]

Procedural requirements

The following procedure is followed to manage an organization's context with regard to data quality:

What	Who	When	How
Analyze			
Determine			
Publish			
Evaluate			
Adjust			

Other requirements

- The context of an organization is expressed in terms of strengths, weaknesses, opportunities, and threats (SWOT analysis) with regard to data quality.
- The SWOT analysis provides input for the procedure for managing improvement actions.

Notes

- Weaknesses in particular can be a reason for formulating an improvement action.

18. Stakeholders

Introduction

The purpose of the stakeholder analysis is to identify the needs and expectations of stakeholders.

Definitions

- Stakeholder [Data Management Wiki]
- Stakeholder analysis [Data Management Wiki]
- Data quality policy [Data Management Wiki]
- Data quality objectives [Data Management Wiki]
- Critical data element [Data Management Wiki]

Procedural requirements

The following procedure is followed for managing an organization's stakeholders with regard to data quality:

What	Who	When	How
Analyze			
Determine			
Publish			
Evaluate			
Adjust			

Other requirements

- All internal and external stakeholders with regard to data quality have been identified.
- The needs and expectations of each stakeholder have been identified.

Notes

- Multiple elements of the DQMS can take stakeholders into account based on the stakeholder analysis. These elements are:
  - Data quality policy
  - Critical data elements
  - Data quality objectives

19. Communication about data quality

Introduction

The purpose of communication about data quality is to clarify the importance of data quality and to indicate what actions are necessary to manage data quality.

Definitions

- Data quality communication [Data Management Wiki]

Procedural requirements

The following procedure is followed to manage communication about data quality:

What	Who	When	How
Planning			
Record			
Implement			
Evaluate			
Adjust			

Other requirements

- There is an up-to-date communication plan.
- It is clear what is being communicated, to which target groups, when, and how (which media).

Notes

None

20. Data lineage

Introduction

The purpose of data lineage is to reveal how output was created, to determine the impact of changes to the way data is processed.

Definitions

- Data lineage [Data Management Wiki]

Procedural requirements

The following procedure is followed for managing data lineage:

What	Who	When	How
Establish and record methodology			
Select en establish tool			
Collect metadata			
Utilize			
Maintain			
Evaluate			
Adapt			

Other requirements

- The scope of data lineage is clear.
- The description of data lineage is based on the technical data model.
- The description establishes a connection between the technical data model and the conceptual or logical data model.
- The scope and methodology have been documented.

Notes

- None

21. Quality requirements

Introduction

The purpose of establishing quality requirements is to determine whether the data meets the quality requirements and whether the DQMS is effective.

Definitions

- Data quality requirement [Data Management Wiki]
- Data file [Data Management Wiki]
- Data element [Data Management Wiki]
- Critical data element [Data Management Wiki]
- Data quality policy [Data Management Wiki]

Procedural requirements

The following procedure is followed for managing data quality requirements:

What	Who	When	How
Identify relevant data files and data elements			
Determine relevant quality dimensions			
Determine quality requirements per file and data element			
Evaluate quality requirements			
Adjust quality requirements			

Other requirements

- Quality requirements have been documented.
- Quality requirements are consistent with the data quality policy.

Notes

- Quality requirements are very similar to quality objectives. Quality objectives also actively steer towards the correct data quality at management level.
- Data quality rules can ensure that certain quality requirements are enforced.
- Critical data elements are the first to be considered when determining quality requirements.

22. Documented information (documentation)

Introduction

The purpose of documented information is to ensure that information that forms part of the DQMS is recorded, maintained, and made available to stakeholders.

Definitions

- [Documented information [Data Management Wiki]](#)

Procedural requirements

The following procedure is followed for managing documented information:

What	Who	When	How
Create			
Classify			
Evaluate			
Determine			
Distribute/Publish			
Evaluate			
Modify			
Archive/Store			
Destroy			

Other requirements

- Documented information has a version number and/or date. This is incremented with each change that is distributed.
- Documented information has a responsible party (owner or author) and a party with final responsibility (accountable).
- Documented information has parties that are consulted and parties that are informed.
- Documented information has a confidentiality class.
- Documented information has an expiration date, after which it is no longer valid and must be updated.

Notes

- Documented information is form-free. It can consist of documents, spreadsheets, presentations, and files (registers).

23. Awareness of data quality

Introduction

The purpose of data quality awareness is to ensure that employees know what role they play within the DQMS and can contribute to the effectiveness of the DQMS. Awareness is achieved through training.

Definitions

- Awareness of data quality [Data Management Wiki]

Procedural requirements

The following procedure is followed to manage data quality awareness:

What	Who	When	How
Measure			
Analyze			

The following procedure is followed to manage an awareness training program:

What	Who	When	How
Develop content			
Develop a program			
Establish			
Implement			
Repeat			
Evaluate			
Adjust			

Other requirements

- The awareness training program describes the target group for the training, the training objectives, the training methods, and the implementation schedule.

Notes

- None

24. Functions/roles

Introduction

The purpose of managing functions/roles in the field of data quality is to clarify how responsibilities and authorities are distributed among employees.

Definitions

- Role [Data Management Wiki]
- Responsibility [Data Management Wiki]
- Data management role [Data Management Wiki]
- Data management professional [Data Management Wiki]
- Data owner [Data Management Wiki]
- Data steward [Data Management Wiki]
- Data custodian [Data Management Wiki]

Procedural requirements

The following procedure is followed for managing functions/roles:

What	Who	When and how
Describe		
Determine		
Assign		To employees.
Evaluate		
Adjust		

Other requirements

- None

Notes

- An employee may have a full-time position in the field of data quality. It is also possible that he or she fulfills a role in the field of data quality within a regular position.
- Roles related to data quality are defined, such as chief information officer, data owner (accountable), data steward (responsible), data custodian, data quality analyst, data supplier, and data user.

25. Employee competence

Introduction

The purpose of managing employee competence is to ensure that they perform their job or role within the DQMS effectively.

Definitions

- Competence of staff [Data Management Wiki]

Procedural requirements

The following procedure is followed for managing employee competence:

What	Who	When	How
Determine			Based on education and experience.
Develop			
Assess			

Other requirements

- None

Notes

- None

26. Data model

Introduction

The purpose of data models is to indicate which entities exist and what the relationships between these entities are.

Definitions

- Data model [Data Management Wiki]
- Data modeling [Data Management Wiki]
- Entity type [Data Management Wiki]

Procedural requirements

The following procedure is followed for managing data models:

What	Who	When	How
Compile/Draw			
Establish			
Communicate			
Maintain			
Evaluate			
Adapt			

Other requirements

- A data model describes entities and the relationships between them.
- The entities are normalized.
- At least one logical and one technical data model are available.
- A logical data model shows the cardinality (1:N, N:1, or N:M) and optionality of the relationships.

Notes

- A data model is metadata.

27. Data cleansing

Introduction
The purpose of data cleansing is to improve the quality of a dataset.

Definitions
- Data cleansing [Data Management Wiki]
- Data quality rule [Data Management Wiki]
- Dataset [Data Management Wiki]
- Data quality issue [Data Management Wiki]

Procedural requirements
The following procedure is followed for managing data quality issues through data cleansing:

What	Who	When	How
Selecting data elements that need to be cleansed			
Selecting data quality rules or error detection methods			
Detecting and reporting data quality issues			
Assessing the results			
Correcting data quality issues			
Evaluating data cleansing			
Adjusting the approach			

Other requirements
- Data cleansing is performed if the quality of the dataset does not meet the specified requirements.
- Data cleansing is accompanied by corrective measures to prevent data quality issues ('plugging leaks').

Notes
- Data cleansing involves cleaning a dataset rather than individual data items.
- The migration of data to another system is often used to apply data cleansing in order to start with a 'clean slate'.

28. Data process (description)

Introduction

The purpose of a data process is to convert data input into data output. The purpose a description of a data process is to make that process communicable.

Definitions

- Data process [Data Management Wiki]

Procedural requirements

The following procedure is followed for managing data processing processes:

What	Who	When	How
Describe process			
Assess and determine process description			
Make process description available			
Use process description			
Evaluate process and process description			
Modify process and process description			

Other requirements

- A description of a data process shows both the processes themselves and the data flows between the processes.
- Both manual and automated processes are described.

Notes

- The description of data processes is also referred to as process lineage. Data lineage focuses on how a data element is processed into a subsequent data element.
- A process description becomes clearer if it also describes where the data comes from (data supplier) and where it goes (data user).
- A process description can be used when evaluating and modifying processes.
- A data flow diagram is one way to describe a data process.

29. Data quality analysis

Introduction
The purpose of data quality analysis is to determine the quality of the data in a dataset.

Definitions
- Data quality analysis [Data Management Wiki].
- Correction [Data Management Wiki]
- Corrective action [Data Management Wiki]

Procedural requirements
The following procedure is followed for managing data quality analysis:

What	Who	When	How
Determine scope			
Select and implement tool			
Prepare			
Execute			
Interpret results			
Implementing corrections			
Implement corrective measures			
Evaluate			
Adjust			

Other requirements
- Data quality analysis is applied if the data quality is insufficiently known.

Notes
- One possible form of data quality analysis is data profiling. In the latter case, data quality issues are reported in terms of numbers and percentages.
- See also Data Quality Analysis: Profiling and beyond.

30. Data quality monitoring

Introduction
The purpose of data quality monitoring is to keep track of the development of data quality over time.

Definitions
- Data quality monitoring [Data Management Wiki]
- Correction [Data Management Wiki]
- Corrective action [Data Management Wiki]

Procedural requirements
The following procedure is followed for managing data quality monitoring:

What	Who	When	How
Define scope			
Select and implement tool			
Select data quality rules			
Prepare			
Execute			
Interpret results			
Implement corrections			
Implement corrective measures			
Evaluate			
Adjust			

Other requirements
- Data quality monitoring is performed if data quality must remain within a certain target value or must develop towards a target value.

Notes
- There is a strong similarity with data quality analysis. However, data quality analysis is used to obtain an overview of data quality. Data quality monitoring is used to see whether data quality has improved sufficiently over time or remains within a set target value.