

Data management

Department of Health Standard

QH-IMP-279-4:2023

1. Statement

Data is recognised as a core strategic asset of value for the Department of Health. This standard establishes the requirements for consistent and effective data management practices and processes to support services and improve health outcomes.

2. Scope

This standard supports the Department of Health [Data management policy](#) and applies to all staff. Staff are defined as employees, volunteers, contractors, consultants, and managed service providers working for the Department of Health.

The scope of the standard includes data (clinical and non-clinical), in all mediums including electronic or non-electronic (physical and hybrid) created, collected, managed, stored, disseminated, and disposed of.

The following key data management functions are within the scope of this standard:¹

- Data modelling and design
- Data integration and interoperability
- Data quality and integrity
- Data capture
- Data cleansing
- Data de-duplication
- Data migration and transformation
- Data analytics and reporting
- Open data
- Data profiling
- Data privacy, confidentiality, and security.

¹ Data management functions listed are adapted from the Queensland Government Enterprise Architecture, [Information management policy framework](#) domain names.

Note: The key functions detailed in the Requirements section of this standard, have different applicability thresholds, which are based on the specific instrument that prescribes the requirements; (that is, the statutory obligation, policy, guidance, etc.). Where there are legislative and regulatory obligations, the term 'must' will apply. Where there are references to best practice, the term 'should' will apply.

This standard may be adopted by Hospital and Health Services (HHSs) and re-branded as an HHS standard or used as a basis for a local HHS specific standard.

3. Requirements

Data management includes the processes throughout the lifecycle of data, from its creation or capture, storage, organisation, sharing and disposal, to ensure the integrity, quality, and appropriate access of the data.

Data governance is supported by effective data management practices and processes to ensure trusted access, sharing and use and disclosure of data. Good data governance is required to provide consistency and balance between the different data management functions.

3.1. Data modelling and design²

- 3.1.1. A standardised approach should be followed in the design and development of data models and have regard to the eHealth Queensland [Data Modelling Guide – Overview and best practices](#) document.
- 3.1.2. Data models developed as part of the implementation of an application design should be maintained over the life of the application.
- 3.1.3. Data models should be published in a central shared repository where possible to enable effective discovery and lineage of data.
- 3.1.4. An approved standard format and structure for data modelling should be adopted to ensure consistency and quality of data to assist knowledge and useability levels.

² For further information in relation to Data modelling, refer to the eHealth Queensland, [Data Modelling Guide – Overview and best practices](#)

3.2. Data integration and interoperability

Integration³

- 3.2.1. Integration must adhere to the guiding principles set out in the [Queensland Health Interoperability – Integration Platform Strategy](#).

Interoperability⁴

- 3.2.2. To achieve system interoperability and support the [Queensland Health interoperability vision](#), staff should have regard to the Information Interoperability Foundations in the [Queensland Health Interoperability – Interoperability Foundations](#) and [Queensland Health Interoperability – Mandated Principles](#).
- 3.2.3. Queensland Health terminology standards must be adopted in accordance with the Department of Health [Enterprise Architecture policy](#), [Clinical data standardisation standard](#) and the [Statistical and corporate data standardisation standard](#).

3.3. Data quality and integrity⁵

- 3.3.1. The [Queensland Health Data Quality Framework](#) must be adopted to inform data quality practice.
- 3.3.2. To improve accuracy, data should be collected as close to the point of activity as possible.
- 3.3.3. A governed approach must be followed to ensure data is fit for purpose, timely, complete, and is relevant so that it meets business needs and data users' requirements.
- 3.3.4. The quality of data must be maintained across the data lifecycle as it moves within and between systems.
- 3.3.5. All staff who identify data quality issues, must raise them with the relevant accountable officer. Accountable officers must take relevant action to resolve the issues and remediate them as per the [Queensland Health Data Quality Framework](#).

³ For further information, refer to the Guiding Principles in the eHealth Queensland, [Queensland Health Interoperability – Integration Platform Strategy](#), pg. 7.

⁴ For further information, refer to the Information Interoperability Foundations in the eHealth Queensland, [Queensland Health Interoperability Vision](#), [Queensland Health Interoperability – Interoperability Foundations](#), and [Queensland Health Interoperability – Mandated Principles](#)

⁵ Adapted from the Data quality dimensions in the eHealth Queensland, [Queensland Health Data Quality Framework](#), pg. 10.

- 3.3.6. Staff should advocate for opportunities to improve the quality of data. This can be achieved through changes to processes and the systems that support them.
- 3.3.7. To improve data reliability, data should be routinely measured objectively and consistently.
- 3.3.8. Data must be collected and used in accordance with agreed requirements, rules, standards, and definitions to ensure integrity and consistency.
- 3.3.9. A standardised approach should be followed for monitoring, maintaining, and reporting and maintaining metadata about data.
- 3.3.10. All data users should be educated and trained in the requirements for ensuring quality data.

3.4. Data capture

- 3.4.1. Effective data capture, as quickly as possible after the activity and at the source, must be promoted to improve quality, coverage, and reliability of data.
- 3.4.2. There must be clear guidelines, procedures, and adequate training (where applicable) for using systems to ensure the data captured is entered correctly and consistently.

3.5. Data cleansing

- 3.5.1. Regular reviews should be undertaken to identify and mitigate data capture and collection errors.
- 3.5.2. Where data errors are identified, processes that have been developed for correcting the data should be followed to bring the quality of the data to an acceptable level.
- 3.5.3. Data cleansing processes which include the removal of irrelevant data, de-duplication, correction of errors and missing data are to conform to relevant policies and data standards.
- 3.5.4. Processes and procedures should be in place to identify and report data errors, incomplete data, and duplications.
- 3.5.5. Any data cleansing applied to data throughout its lifecycle, is considered a 'data transformation', and must be transparent as part of its documented lineage.

3.6. Data de-duplication⁶

- 3.6.1. Robust data collection and reporting systems and processes should be in place to remove (or reduce) the existence of duplication.
- 3.6.2. Relevant data standards, guidelines, processes, and data mapping tables should be developed and/or adopted to address duplication.
- 3.6.3. Mechanisms should be in place, including audits, to review and compare data and address duplication.

3.7. Data migration and transformation

- 3.7.1. Data migration plans must be documented, and migrations must be implemented in a manner that preserves all data to an acceptable level as per an agreed specification.
- 3.7.2. All data transformations (current and historical versions) must be transparent as part of its documented lineage, and as per a defined specification.
- 3.7.3. Data conversion/transformation processes must be documented and approved by the relevant governance groups.
- 3.7.4. A consistent methodology for data transformation processes should be applied.
- 3.7.5. Business continuity must be maintained when transferring data between either storage types, formats, or computer systems.

3.8. Data analytics and reporting

- 3.8.1. Approved and consistent processes, techniques, tools and logic should be adopted where possible to support insightful, trusted and explainable data analysis.
- 3.8.2. When undertaking data linkage activities, staff should have regard to the [Queensland Data Linkage Framework](#). For further information in relation to data linkage, refer to the [Data linkage in Queensland QHEPS](#) site.

3.9. Open data⁷

- 3.9.1. Where appropriate, data must be made available under the least restrictive licence allowing for its use and re-use.

⁶ For further information, refer to the Data quality dimensions in the eHealth Queensland, [Queensland Health Data Quality Framework](#), pg. 15.

⁷ Adapted from the Principles in the Queensland Health, [Open Data Strategy 2023-2026](#), pg. 3

- 3.9.2. Where practicable, data must be published in machine readable formats that can be downloaded, indexed, and searched by commonly used web applications.
- 3.9.3. Open data maturity will work towards improvement by adhering to day to day responsibilities detailed in the [Queensland Health Open Data Strategy 2023-2026](#).

3.10. Data profiling

- 3.10.1. Data profiling techniques should follow best practice methodology and processes to assist the identification and prioritisation of potential data quality improvements.
- 3.10.2. Where possible, automated data profiling tools should be used to streamline processes and assist in the assessment of the quality of and identification of potential issues with data.

3.11. Data privacy, confidentiality, and security

- 3.11.1. Data that is shared must be accurate, timely, and done so in a secure manner that meets privacy, confidentiality, and consent requirements. Data is to only be shared with those with a legitimate reason for access where lawful and authorised.
- 3.11.2. Conditions to support the appropriate access, collection, use, storage, sharing, and the distribution of data must be established, maintained, and monitored in accordance with relevant Information security policies and standards.
- 3.11.3. In alignment with the *Access control standard*, controls must be established to maintain appropriate authorised user access to data and prevent inappropriate access.
- 3.11.4. All data must be classified in commensurate with its legislative requirements, sensitivity, and criticality to the department in line with the *Information security classification and handling standard* and guideline.
- 3.11.5. Staff must be aware of, and comply with, relevant statutory obligations concerning privacy and confidentiality of data, its collection, use, disclosure, and storage. Where there is any uncertainty, advice must be sought from the Department of Health Privacy and Right to Information Unit or Legal Branch.
- 3.11.6. Staff must meet legislative and regulatory requirements regarding the privacy and confidentiality of data in line with the *Information Privacy Act 2009* (Qld) and the *Hospital and Health Boards Act 2011* (Qld), the *Information access, use and disclosure standard* and policy artefacts in relation to confidentiality and privacy.

3.11.7. Staff must ensure compliance with the *Public Records Act 2002* (Qld), QGEA Records Governance policy, related departmental policies, standards, and other relevant recordkeeping policies in relation to the making, keeping and disposal of records.

3.11.8. Data will require appropriate retention and disposal requirements to be implemented, in accordance with an approved Retention and Disposal Schedule/s.

4. Data governance

Data governance ensures that data is managed efficiently effectively, and lawfully. Effective data governance requires clear authorising and accountability structures, systems in the form of principles, policies, standards, procedures, guidelines, and appropriately skilled staff that understand their roles and responsibilities.

The obligations of all staff with regard to appropriate treatment of identifiable patient information (see Part 7 of the *Hospital and Health Boards Act 2011*), statutory collections (see *Public Health Act 2005* and other health portfolio legislation) and any information about persons capable of being identified (i.e., 'personal information' under the *Information Privacy Act 2009*) is to be an overarching concern of data governance.

The data governance structures that underpin the Data management policy and this Data management standard are covered in the Queensland Health [Information Management Framework](#).

Data governance provides overarching guidance to the data management functions detailed in this standard. This is illustrated in the Figure 1, Appendix 1.

5. Data management lifecycle

It is useful to understand data in terms of a data management lifecycle to inform practices and decisions. Managing data involves a set of interconnected processes aligned with the data lifecycle.⁸ During the life of data, it may be created, extracted, exported, imported, migrated, edited, cleansed, transformed, converted, integrated, segregated, aggregated, referenced, reported, analysed, mined, backed up, recovered, shared, archived, and retrieved or disposed.

The data management lifecycle can be depicted in several ways and with a variety of steps and names for those steps. One example is provided in Figure 2, Appendix 2.

⁸ Adapted from the DAMA Data management body of knowledge, Second edition, 2017, rev. Henderson, D, Early, S and L Sebastian-Coleman. Technics Publications LLS, Basking Ridge, NJ, pg. 28.

6. Legislation

- [Electronic Transactions \(Queensland\) Act 2001](#)
- [Evidence Act 1977 \(Qld\)](#)
- [Hospital and Health Boards Act 2011 \(Qld\)](#)
- [Human Rights Act 2019 \(Qld\)](#)
- [Information Privacy Act 2009 \(Qld\)](#)
- [My Health Records Act 2012 \(Cwth\)](#)
- [My Health Records Rule 2016 \(Cwth\)](#)
- [Public Health Act 2005 \(Qld\)](#)
- [Public Records Act 2002 \(Qld\)](#)
- [Public Service Act 2008 \(Qld\)](#)
- [Right to Information Act 2009 \(Qld\)](#)

7. Supporting documents

Queensland Government:

- [General Retention and Disposal Schedule \(GRDS\)](#)

Queensland Government Enterprise Architecture (QGEA):

- [Information access and use policy \(IS33\)](#)
- [Information asset custodianship policy \(IS44\)](#)
- [Information management policy framework](#)
- [Information security assurance and classification guideline](#)
- [Information security classification framework \(QGISCF\)](#)
- [Information security policy \(IS18:2018\)](#)
- [Records governance policy](#)
- [Records governance policy implementation guide](#)

Queensland Health:

- [Audit and recordkeeping standard \(OH-IMP-484-9:2021\)](#)
- [Data and application custodianship roles and responsibilities](#)
- [Data classification tool](#)
- [Definitions for identifiable, de-identified, non-identified, non-identifiable, reidentified and anonymised data](#)

- [De-identification and anonymisation of data guideline](#)
- [Information access, use and disclosure \(QH-IMP-484-2:2021\)](#)
- [Information Management Framework](#)
- [Information security classification and handling guideline \(QH-GDL-468-1:2022\)](#)
- [Information security classification and handling standard \(QH-IMP-468-3:2022\)](#)
- [Information security policy \(QH-POL-468:2019\)](#)
- [Information sharing guidance](#)
- [List of approved Data and Application Custodians](#)
- [Management and access to documents and records factsheet](#)
- [Queensland Health Clinical intelligence and Business Intelligence Mandated Principles](#)
- [Queensland Health Data and application custodianship policy \(QH-POL-469:2019\)](#)
- [Queensland Health Data and application custodianship standard \(QH-IMP-469-3:2019\)](#)
- [Queensland Health Data Quality Framework](#)
- [Queensland Health Data Quality Framework Self-Assessment Tool](#)
- [Queensland Health Enterprise Architecture \(QHEA\) Information Architecture Guideline](#)
- [QHEA Information asset standard \(EAF-STD:2021\)](#)
- [Queensland Health Information Management Strategy](#)
- [Queensland Health Information Management Strategy Roadmap](#)
- [Queensland Health Interoperability – Integration Platform Strategy](#)
- [Queensland Health Interoperability – Interoperability Foundations](#)
- [Queensland Health Interoperability – Mandated Principles](#)
- [Queensland Health Interoperability Vision](#)
- [Queensland Health Open Data Strategy 2023-2026](#)

Department of Health:

- [Clinical data standardisation standard \(QH-IMP-279-1:2014\)](#)
- [Clinical records management policy \(QH-POL-280:2014\)](#)
- [Corporate records management policy \(QH-POL-467:2019\)](#)
- [Data management policy \(QH-POL-279:2014\)](#)
- [Data modelling guide – Overview and best practices](#)
- [Data supply requirements documentation standard \(QH-IMP-469-2:2019\)](#)

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- [Display of date and time in electronic systems standard \(QH-IMP-279-3:2014\)](#)
- [Disposal of corporate records guideline \(QH-GDL-476-2:2020\)](#)
- [Documentation of date and time entry in the paper-based health record standard \(QH-IMP-279-2:2013\)](#)
- [Enterprise Architecture policy \(QH-POL-402:2014\)](#)
- [Health Sector \(Clinical Records\) Retention and Disposal Schedule](#)
- [Information security standard \(QH-IMP-066-1:2015\)](#)
- [Privacy breach management](#)
- [Privacy Impact Assessment \(PIA\)](#)
- [Queensland Data Linkage Framework](#)
- [Recording My Health Record information standard \(QH-IMP-396-2:2013\)](#)
- [Research management policy \(QH-POL-013:2015\)](#)
- [Research management standard \(QH-IMP-013-1:2015\)](#)
- [Retention and disposal of clinical records standard \(QH-IMP-280-1:2014\)](#)
- [Statistical and corporate data standardisation standard \(QH-IMP-469-1\)](#)

8. Definitions

Term	Definition	Source
Application	A software system deployed by the agency which has part of an agency's business processes embedded with it.	Data and application custodianship roles and responsibilities
Clinical data	A collection of data and information gathered or generated to record the clinical care and health status of an individual or group. Also referred to as a Health Record, Medical Record, Healthcare Record.	Department of Health Digital Policy Glossary
Data	The representation of facts, concepts or instructions in a formalised (consistent and agreed) manner suitable for communication, interpretation or processing by human or automatic means. Typically comprised of numbers, words or images. The format and presentation of data may vary with the context in which it is used.	Data and application custodianship roles and responsibilities

Term	Definition	Source
	Data is not information until it is utilised in a particular context for a particular purpose.	
Data collection	<p>The systematic gathering of data designed to address a specific set of business needs which may be from various sources, including manual entry into application(s), questionnaire(s), interview(s), observation, existing record(s) and electronic device(s).</p> <p>A data collection is a type of data set for a specific named purpose.</p> <p>Supports clinical care, funding, management, planning, monitoring, improvement, research and evaluation of health and health services.</p>	Data and application custodianship roles and responsibilities
Data governance	Implementation of a set of policies, processes, structures, roles and responsibilities to ensure that an agency's data is managed effectively and that it can meet its current and future business requirements.	NSW Government Data Glossary
Data lifecycle	A data lifecycle illustrates the stages of data management required over time, from the time of planning and creation to the time that data is either archived or destroyed.	NSW Government Data Glossary
Data management	<p>Data management is concerned with valuing and managing data as a strategic asset of government with the same rigour as that applied to other strategic assets.</p> <p>Data management includes:</p> <ul style="list-style-type: none"> • data modelling • data interoperability • redress mechanisms • data quality and integrity • data cleansing • data de-duplication • data capture • data migration and transformation • data mining • data warehousing 	Queensland Government Enterprise Architecture (QGEA), <i>Information management policy framework</i> , Data management domain definition IM-6, 2017

Term	Definition	Source
	<ul style="list-style-type: none"> • open data and • data profiling. 	
Data set	<p>A set of data items that is collected for a specific purpose.</p> <p>A data set may comprise a smaller grouping (or subset) of data which, though limited by some constraint or feature type, is located physically within a larger data set.</p>	Data and application custodianship roles and responsibilities
Fit for purpose	The data accuracy, validity, reliability, timeliness, relevancy, completeness, and uniqueness.	Queensland Health <i>Data Quality Framework</i>
Governance	The structured decision-making exercised by accountable and responsible persons to provide strategic direction and ensure operational, or program objectives are achieved; manage risks and drive organisational improvement in an ethical, accountable, controlled, defensible and transparent manner.	Queensland Government For government Glossary
Metadata	Data about a particular information asset. Specifically, the contextual information about an information asset upon which the asset was established and will be managed on an ongoing basis.	Queensland Government For government Glossary
Standard	Sets out the technical or other specifications necessary to ensure that a method or material will consistently do the job it is intended to do.	Queensland Government For government Glossary
Strategic Asset	<p>An asset, or group of assets, that needs to be retained if the organisation is to maintain capacity to achieve or promote any outcomes that are important to the current or future wellbeing of the organisation.</p> <p>Data is a valuable corporate asset.</p> <p>Data needs to be managed, maintained and exploited in a manner similar to that of other more traditional assets of government (e.g. information systems, buildings, plant and equipment).</p>	Queensland Government Enterprise Architecture (QGEA), <i>Information Principles, 2009</i>

Version Control

Version	Date	Comments
1.0	21 02 2023	New standard. Approved by the Information Management Strategic Governance Committee. Approved to publish by the Deputy Director-General eHealth Queensland.

9. Appendix 1 – Data management functions

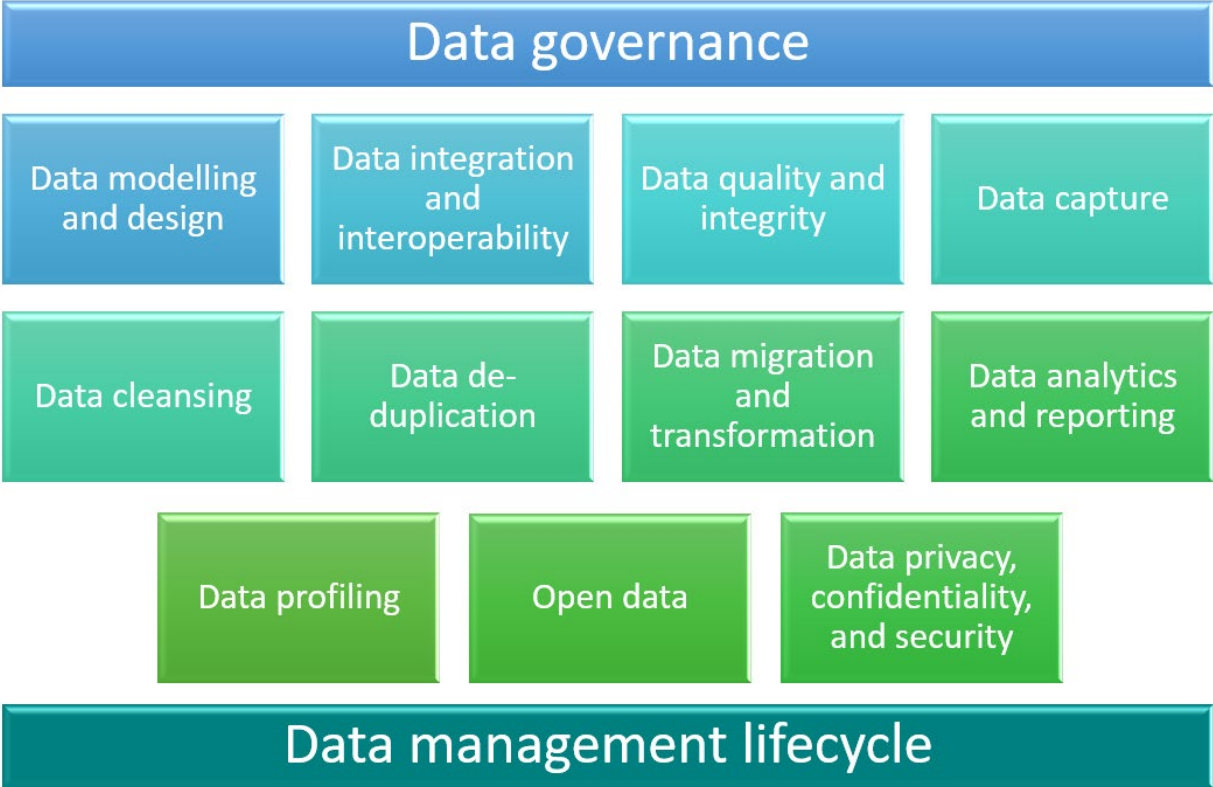


Figure 1 Data management functions

10. Appendix 2 – Data management lifecycle

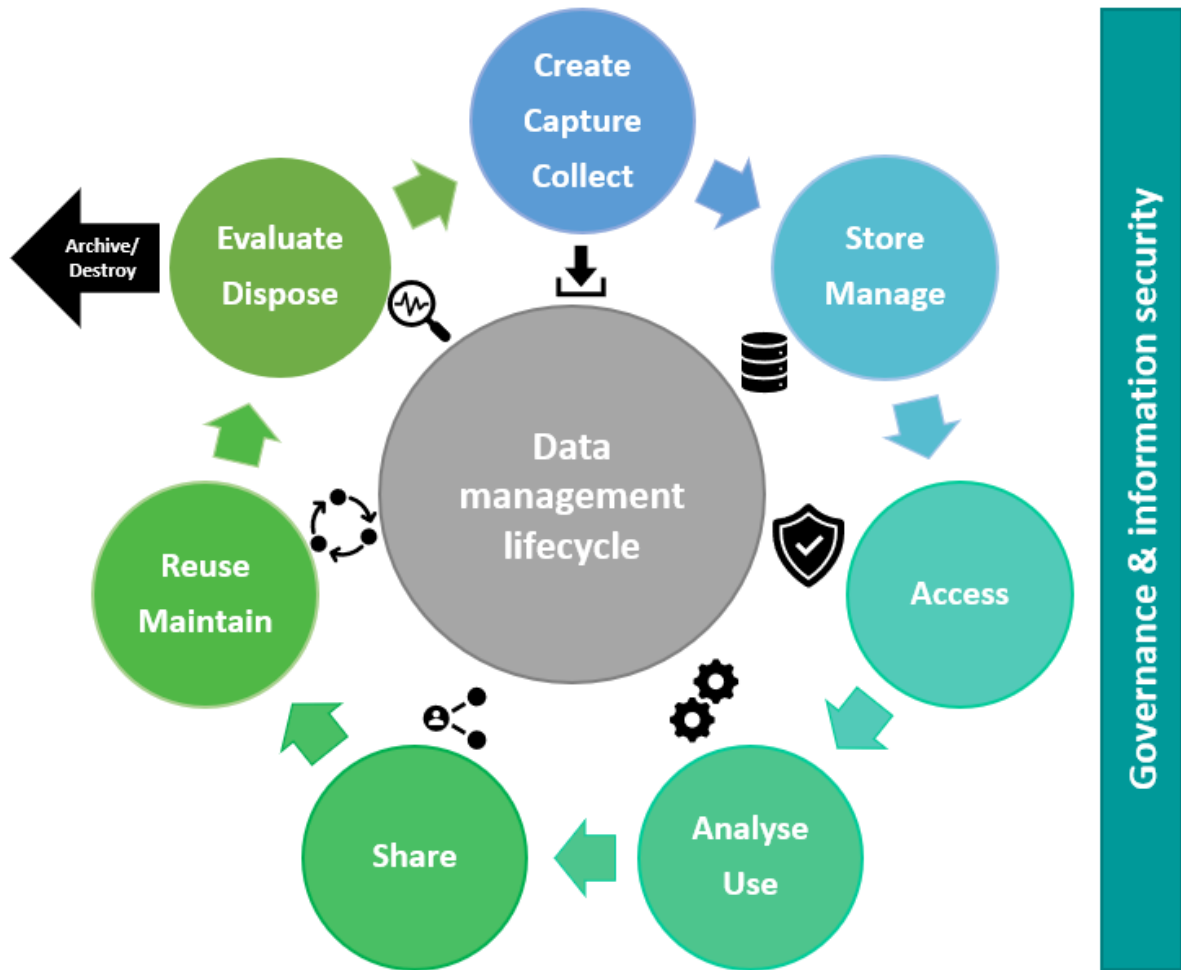


Figure 2 Data management lifecycle