



An Roinn Caiteachais
Phoiblí agus Athchóirithe
Department of Public
Expenditure and Reform

Data Management Maturity Assessment

ADVICE NOTE

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INTRODUCTION

This advice note defines a self-assessment data maturity framework for Public Service Bodies (PSBs) to execute in order to develop a better understanding of their Data Capability as set out in the Public Services Data Strategy 2019 – 2023.

“Define and publish a self-assessment data maturity framework for PSBs to execute”.

With the increased digitisation of public services and the growing emphasis on evidence-based policy making, data has become core to the work of PSBs, both in terms of policy and services. As such, there has been a growing need for PSBs to develop their data management capability through a combination of data strategies and initiatives.

The first step for a PSB in improving its data management is to establish an understanding of its existing data management processes and procedures. In providing PSBs with a stronger understanding of their data management processes and procedures, a data maturity framework enables a PSB to better manage and secure the data they hold through the improvement of these processes.

To support PSBs in understanding their data management capability, this advice note will explain data maturity frameworks, outlining their purpose, their benefits and how to conduct an assessment using the framework. It will recommend a standard data maturity framework that can be used by PSBs to assess their own data management capability. This recommendation will also be accompanied by a step-by-step guide and sample questions to assist PSBs in carrying out a data maturity assessment using the framework.

DEFINITION

A data maturity framework is a method for organisations to assess their current data management capability by examining their data management processes and procedures in a range of different data areas and benchmarking these processes and procedures against pre-defined levels of maturity. An assessment utilising a data maturity framework is known as a data maturity assessment. A key objective of a data maturity assessment is to provide an understanding of the existing data processes, procedures and standards that are at play in the organisation.

Developing a PSB’s data management capability starts with an assessment of their current policies and procedures, and the identification of a current level of maturity for the PSB across the data areas set out in the data maturity framework. Building from this assessment, a PSB can then define the maturity it would like to achieve across the different data areas and the actions that are necessary to take.

There are two main aspects to a data maturity assessment:

- Firstly, it provides a view of existing data management processes, practices, capabilities, workflows and governance within an organisation. It evaluates different process across these areas and identifies an associated level of data maturity across defined data areas.
- Secondly, it assists in the definition of a desired maturity level in a data area, including the setting out a roadmap of improvements necessary to reach this goal. Data maturity assessments are often the starting place from which an organisation can develop a data strategy.

DATA MATURITY FRAMEWORKS

With a wide variety of data maturity frameworks to choose from, it can be challenging for a PSB to select the most suitable and appropriate data maturity framework. Often these frameworks focus on different areas of data management and are often tailored to specific industries. In general, they vary in the scope, their application, the different aspects of data management they focus on, and consequently their outputs. While there are many common elements to most data maturity frameworks, there is a danger with so many maturity frameworks that PSBs choose different maturity frameworks, eliminating one of the main benefits of data maturity frameworks, which is to enable peer-to-peer comparisons around data maturity.

In undertaking a data maturity assessment, a PSB is likely to benefit in several ways both through the process itself and its outputs. These benefits include:

- A greater awareness and appraisal of data and data activities within a PSB, addressing key elements of data management such as processes, procedures and standards.
- A greater understanding amongst staff of concepts, principles and practices of data management.
- A standard, uniform approach by which a PSB's performance around data management can be assessed and re-assessed (in the future), in order to identify track implementation of improvements.
- To assist in the identification of gaps/opportunities or potential risks that exist in current data management processes and procedures.

MATURITY LEVELS

Data maturity frameworks generally all follow a similar high-level approach to assessing data processes and procedures, and benchmarking of these processes and procedures against different predefined levels of maturity. Each maturity level has a number of characteristics for a process at that level. The below table serves to demonstrate the different maturity levels by which data processes and procedures are measured.

Maturity Level 1	Initial/Ad Hoc	Processes are reactive with absence of data ownership or accountability
Maturity Level 2	Repeatable	Some processes and roles are defined with the consistency starting to emerge in terms of tools and knowledge
Maturity Level 3	Defined	Emerging Data Management capability with the centralised definition of processes and coordination of data policy
Maturity Level 4	Managed	Recommended tools and processes are being use consistently. Processed are quantified and controlled
Maturity Level 5	Optimised	Focus is on continuous improvement as data processes are highly consistent and predictable

DATA AREAS

When undertaking a data maturity assessment, a PSB will evaluate its existing data processes and procedures in an area, assessing the level of maturity against the predefined levels. By undertaking this exercise, it can also help identify the target level, and consequently the steps that would need to be taken to reach this level.

Different Data Maturity frameworks often focus on different areas of data management at varying levels of detail. They also approach it from a range of perspectives and with differing approaches. The following table provides a sample of the wide variety of data management areas provided for in data maturity frameworks.

Data Security	Data Quality	Data Governance	Business Case
Stewardship	Data Classification	Data Analytics	Warehousing
Data Interoperability	Organisation Structures	Administration	Data Modelling

In general, while there are many differences in the areas outlined above, they generally cover the same broad topic – “Data management and governance policies, practices and procedures”.

RECOMMENDATION

Following extensive desk research and engagement with representatives from PSBs as part of the Data Strategy Advisory group, the **DAMA Data Management Book of Knowledge 2.0 (DAMA-DMBoK)** was selected as the recommendation for the standard data maturity framework for data maturity self-assessments. Some factors that led to DAMA-DMBoK being favoured were the following:

- It is the leading data maturity assessment framework with significant adoption across data industry.
- It provides comprehensive coverage of a range of data management areas.
- It provides for flexibility and can be tailored to suit a specific PSB’s requirements.
- It has significant adoption and application across both the public and private sector.
- Its widespread adoption means that expertise and consultancy services are available in the market.
- A wide range of supporting material available such as books, training courses and advice is available.
- Flexibility in incorporating external standards and governance frameworks such as ISO or W3C.
- It has been successfully utilised and applied in the Irish Public Service by the Ordnance Survey Ireland, a leading PSB in driving the utilisation of geospatial data across the public service.

GUIDANCE

In line with the Public Service Data Strategy action to “*Define and publish a self-assessment data maturity framework for PSBs to execute*”, this advice note issues the following recommendations for PSBs to follow:

1. **All PSBs that store and manage significant volumes of data should undertake a Data Maturity Assessment in order to develop a better understanding of their data management capability. By undertaking such an exercise, PSBs will position themselves to develop and improve their existing data management policies, practices, procedures, and use of data.**
2. **The DAMA-DMBoK 2.0 is recommended as the standard data maturity framework for PSBs to assess their data management capability. PSBs should follow the DAMA-DMBoK guide to undertaking maturity assessments where suitable. This does not preclude PSBs from using other data maturity frameworks that may be better suited to their own needs or the needs of a project.**
3. **A self-assessment guide has been developed to assist PSBs in undertaking a data maturity assessment. This guide, which can be tailored to suit specific needs and requirements, is based on the DAMA-DMBoK data maturity framework. It includes a step-by-step approach to a data maturity assessment. More details on the self-assessment can be found in the Data Maturity Self-Assessment Guide, which is available alongside this guidance note.**

4. **Data maturity assessments are often the starting place from which an organisation can develop a data strategy. They can also be used to evaluate an organisation's progress in implementing an existing strategy. PSBs are encouraged to utilise the findings of a Data Maturity assessment, either as starting point from which to develop a strategy or to evaluate and renew commitment to an existing data strategy.**

DAMA-DMBOK

DAMA-DMBoK is composed of 11 data areas, which cover a range of data activities. Each area is broad and covers a range of data processes, procedures and standards, and can be tailored to suit specific interests or needs. Data governance is regarded as a key capability that is at the centre of all data management activities. Core to each of these areas are the people, technology and processes of the organisation.

The 11 knowledge areas of DAMA-DMBoK are:

- **Data Governance** - Guides all other data management functions. Ensures data is managed properly, according to the organisations' policies and best practices.
- **Data Architecture** - Defines the blueprint for managing data assets in order to align with the organisation's strategy, meeting business and technical requirements.
- **Data Framework & Design** - Precise form outlining the framework and design for the discovering, analysing, representing, and communicating of data and data requirements.
- **Data Storage & Operations** - Design, implementation and support of stored data to maximise value. Operations provide support throughout the data lifecycle from planning through to disposal of data.
- **Data Security** - Ensures that data privacy and confidentiality are maintained, that data is not breached, and that data is accessed appropriately.
- **Data Integration & Interoperability** - Processes related to the movement and consolidation of data within and between data stores, applications, and organisations.
- **Document & Content Management** - Planning, implementation, and control of activities used to manage the lifecycle of data and information found across the organisation outside of databases, such as on eDocs, Hive sites and other unstructured data locations.
- **Data Warehousing & Business Intelligence** - Planning, implementation, and control processes to store data and enable value to be obtained through analysis and reporting.
- **Metadata** - Planning, implementation, and control activities to enable access to high quality, integrated Metadata. It includes definitions, glossaries, data flows, and other information critical to understanding data and the systems through which it is created, maintained, and accessed.
- **Data Quality** - Planning and implementation of quality management techniques to measure, assess, and improve the fitness of data for use within.
- **Reference & Master Data** – Managing shared data to reduce redundancy and ensure better data quality through standardised definition and use of data values.

DAMA-DMBoK is very customisable and can be tailored by PSBs to suit their needs and goals. PSBs can place additional focus on certain areas, drop areas that are of less relevance to their organisation and decide the level of granularity for the assessment. There is no obligation for PSBs to assess across all areas of DAMA-DMBoK and it may even be onerous and unnecessary to do so.

DAMA-DMBoK defines 5 levels by which PSB's data management capabilities will be evaluated and benchmarked. For each level, characteristics of data management processes and procedures at that level are outlined. The maturity levels are defined as follows:

- Level 1 – Initial/Ad-hoc: Absence of data ownership or accountability across organisation with success dependent on individual level.

- Level 2 – Managed: Limited management around data processes with some roles and process defined.
- Level 3 – Defined: Documented Standards around data process are set and used across organisation.
- Level 4 – Quantitatively Managed: Data Process are quantified and controlled.
- Level 5 – Optimised: Process improvement goals are set and pursued.

For a PSB, it may be better to tailor these maturity levels and define them in a manner easily understood by decision makers and stakeholders.

One of the biggest advantage offered by DAMA-DMBoK is its largest scale adoption across multiple industries, meaning that are a range of options available to PSBs for a DAMA-DMBoK assessment. These options include internal assessments both localised and PSB wide, and professional services that can be procured. A useful starting point for any PSB undertaking a DAMA-DMBoK data maturity assessment is to familiarise themselves further with DAMA-DMBoK 2.0.

END