Conceptual Data Model Standard

Standard owner:	Chief Operating Officer
Standard approver:	Executive Committee
Approval date:	2nd May 2023
Annual review date:	April 2024
Document owner:	Managing Director, Data Management Office.

1. Purpose

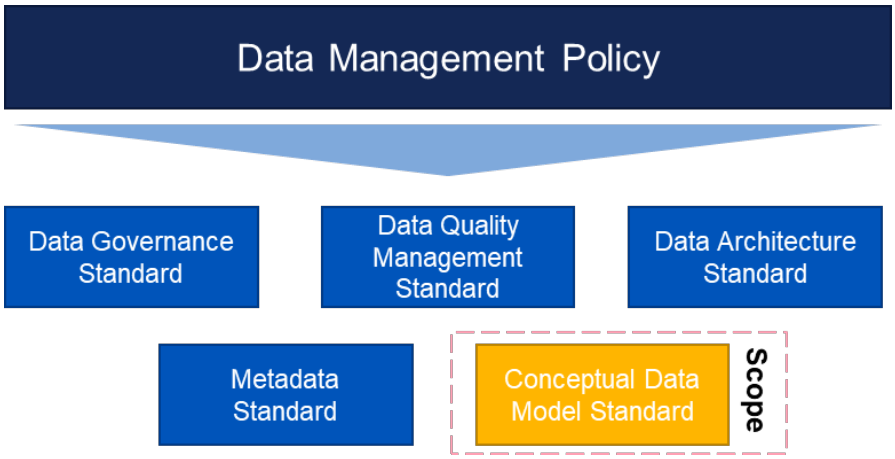
1.1 Purpose

This document establishes the Conceptual Data Model (CDM) standards that must be followed when creating and maintaining all CDMs where applicable.

This standard can evolve along with regulatory, business or any other requirements which need to be considered. Hence, it will be adjusted and updated on regular basis accordingly.

The main objective of this standard is to achieve bank-wide standardisation for creating and maintaining CDMs. In particular, if a specific business function chooses to create and/or maintain CDMs including material data, they must adhere to the list of standards documented in subsequent sections of this document.

The adoption of this standard is mandatory to ensure that the implementation of the Data Management Policy in relation to Structured Data ("the Policy") is carried out appropriately and consistently across businesses functions at BBB.



2. Scope

This Policy and the associated Standards, apply to all BBB entities, operations, subsidiaries, and Colleagues (see Appendix A Policy Scoping, Policy Governance Framework for definitions) and interactions with Structured Data ("data"), from origination to processing, reporting and analytics.

Note: The Bank's Data Protection Policy and Information Security policies relate to issues of data protection and security, therefore are not covered in the Policy.

3. Key Requirements

3.1 Definitions

The diagram below provides various layers of data models and the scope in which the following standard is applicable.

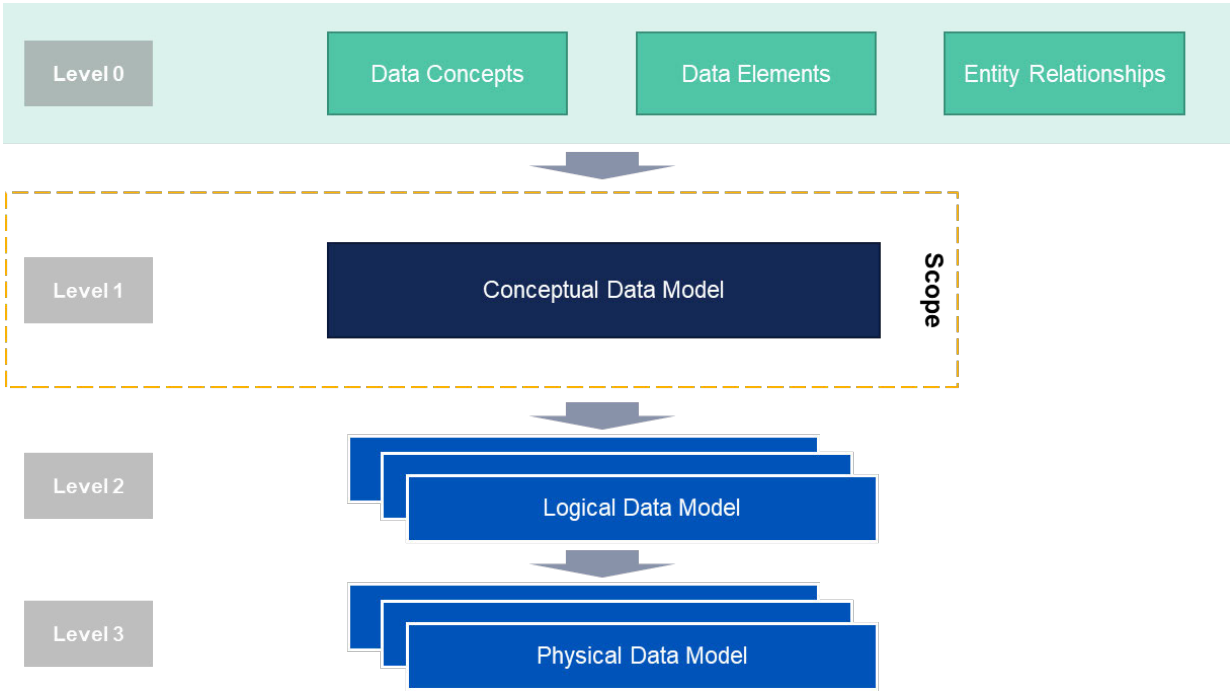


Figure 1: Data Model Reference Architecture

3.1.1 Conceptual Data Model (CDM)

A CDM is a formal representation of a set of data concepts or data elements needed to satisfy a business objective, as well as their relationships to one another. The information should be non-technical and independent of any system and implementation. An effective CDM enables tracing between the various systems or processes used within the bank.

The CDM should:

- Support important data elements supported by specific data concepts.
- Foster improved business understanding and semantic reconciliation for that level.
- Be organised in smaller subsets to support group of applications or platform specific view.

A common business terminology (e.g., Business Glossary) should be in place to avoid data duplication and streamline combination of CDMs at the enterprise level.

The below example CDM provides an overview of data concepts within the Product and Programme Management domain and the relationships between them:

Figure 2: Conceptual Data Model Example

CDM elements are described as follows:

Entity	Description	Example
Data Domain	A logical representation of a category of data that has been designated and named.	Relationship Management Domain
Data Concept	Logical groupings of data elements that describe a business concept.	Delivery Partner
Data Element	A business-friendly logical definition of data. It is typically associated with one or more attributes / columns / fields within datasets that describes the meaning or semantics of the fields.	Delivery Partner Name

There are many types of business and cardinality relationships between data concepts and data entities; these are not limited to those listed below:

Example business relationship highlight the business context behind the data concept:
Is a Sub-Type of
Is Derived from
Contains
Is an Attribute of
Impacts

Example cardinality relationships between data entities:
One to Many
One to One
Zero or one to Many
Zero or one to One
Many to Many

The following definitions and descriptions of logical and physical data models are meant to provide context but are not in scope for the rest of this document.

3.1.2 Logical Data Model

A data model on the abstraction level of the entity relationship model including data elements that represent the inherent properties of the data, including names, definitions, structure and integrity rules, independent of software, hardware, volumetric, frequency of use or performance considerations.

Database normalisation is the process of organising a database to reduce redundancy, improve data integrity whilst also improving the speed, accuracy, and efficiency of the database. Typically, normalisation is done to the third normal form (3NF).

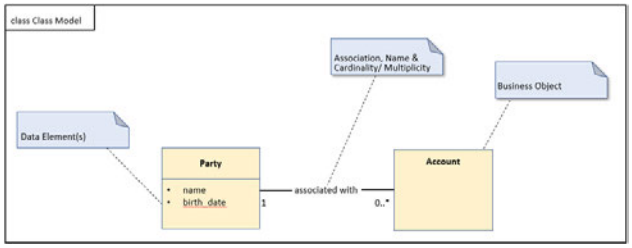
3.1.3 Physical Data Model

The definition or representation of a data model for implementation and realisation in a particular Data Base Management System (e.g., SQL), including naming convention and physical data type. It may be de-normalised for performance and access simplification. A high-level description of a database design without physical layout.

3.2 Standards

This section lays down the standards that must be followed and adopted while creating and maintaining CDMs.

Standard	Description	Benefits
Materially relevant data concept(s) and data element(s) used in CDM must be defined and documented in the metadata management tool.	The CDM captures the relationship between the data concepts and data elements (or terms) that are documented in the metadata management tool. This standard imposes that critical data concepts and data elements organised in CDM must be defined in the published Business Glossary and uniquely identifiable through the term. Note: The CDM must capture critical data concepts as a minimum.	• Easy to establish linkage and alignment across different artefacts.

CDM must adhere to defined data model design requirements.	The CDM is required to capture following characteristics which are associated with data concepts and data elements. ▪ Associations including: ○ Cardinality/Multiplicity ○ Direction of the association ○ Association name (e.g., contract “belongs to” party) ▪ Data concept(s) and data element(s) must have a description (which is consistent with what is document in the metadata management tool). Example:  *Figure 3: Sample CDM modelling requirements diagram*	• Streamlines the CDM. • Understood by various stakeholders (business, architects, etc.) across the bank due to standardisation. • Abstract view simplifies the complex topics.
All CDMs must be governed and maintained	The Policy and Standards must be followed, which focus on defining a set of principles and minimum standards, to ensure that data and its associated risks are adequately (fit-for-purpose) managed and mitigated throughout the data lifecycle. Governance must be executed over the following areas: • Set up and the maintenance of the CDM. • Change management for components of a CDM and linked data assets. The Policy and Standards define the mechanism for escalation management and conflict resolution through the appropriate governance forums. The roles and responsibilities of persons (e.g., Data Architecture and Metadata capabilities) and group (e.g., Data Governance Forums) involved in executing governance are clearly stated in the Policy and Standards. It also incorporates quality assurance through the definition of appropriate approvals, controls and processes, change log to ensure for completeness, accuracy and timelines of the data being modelled.	• Enables the Policy and Standards.
CDM must be consistently stored in a designated business architecture tool.	Key categories and interactions of data concepts, such as data concepts, data elements and relationships must be recorded consistently in an appropriate architecture tool.	• Consistent and accurate storage of data.

Critical Data Elements (CDEs) must be specified on CDMs.	Data elements that are designated as critical to the business (such as KPIs or metrics in reports) must be documented / linked to an appropriate CDM.	• Enable informed business decisions and performance tracking.

Note: Must implies that these standards are mandatory when assessing compliance against this standards document.

4. Roles and Responsibilities

All BBB colleagues with responsibility for the ownership, production and consumption of data are responsible for the integrity of the data, including reports and documents, under their control.

4.1 Data Management Office (DMO)

Role and Accountability/ Responsibility
The Data Management Office is empowered by the Data Management SteerCo to define data management strategies and drive data governance priorities with the goal of establishing a robust data management capability to govern BBB data and enabling BBB to meet their objectives through a simplified data architecture and delivering valuable business insight.
Metadata and Master Data Manager is; - **Responsible** for publishing data models. **Data Management Design and Modelling Director is** - **Accountable** for development of data models and mapping conceptual data models to application(s), supported by Metadata and Master Data Manager. - **Accountable** for ensuring regular maintenance and completeness of conceptual data models.

4.2 Data Domain Owner

Role and Accountability/ Responsibility
Data Domain Owners are Data Architects assigned by the DMO to oversee one or more data domains. They are responsible for modelling, setting standards and approving definitions for data aligned to their data domain(s). They are involved in the change management process, development and updating of data models, and attending and providing approval at relevant architecture and technology forums.
- **Responsible** for development of data models and mapping data models to application(s). - **Responsible** for updating data models. - **Responsible** for approving data models.

4.3 Data Steward

Role and Accountability/ Responsibility
Data Stewards are data-literate individuals identified by the Data Owner as the person who understands the data (e.g., data flows, critical data items) within a business area.
- Responsible for providing knowledge and support related to their business function or area they are stewarding and supporting the regular maintenance and completeness of conceptual data models.

5. Further Reading

Further reading: Data Management Policy.

6. Policy Controls

Controls in place regarding this policy are as follows:

Control Reference	Control Title	Description	Frequency
DM-001	Data Governance Roles	All business areas must assign a Data Owner and Data Steward. All systems must have an assigned Data Custodian. Each data domain must have an assigned Data Domain Owner.	**Continuous**
DM-002	Critical Data Elements (CDE) Identified and Under Governance	Critical Data Elements (CDEs) are data elements used for making business decisions that have an impact on the bank's financial performance, results, or bottom line. This control requires that CDEs must be defined and grouped within the business objects hierarchy with associated metadata, data sources, lineage and governance roles recorded and maintained.	**Continuous**
DM-003	Preventative Data Quality	Preventative data quality controls (e.g. input validations) must be implemented for critical data elements.	**Continuous**
DM-004	Detective Data Quality	Detective data quality controls (data quality measurement) must be implemented for critical data elements.	**Monthly**
DM-005	Issue Management	A data quality issue management process is in place.	**Monthly**
DM-006	Systems of record	System of Record is where the data is screened, managed, updated, deleted or mastered, validated and where exceptions are remediated. This control requires that each CDE has a designated system of record (which cannot be an end-user repository) with appropriate controls, where the data is managed, updated, deleted or mastered, validated and where exceptions are remediated.	**Continuous**

DM-007	Data Assessment as part of Change Initiatives	Data Assessments must be performed as part of the evaluation and design of changes and solutions to ensure data architecture principles are followed.	**Continuous**

7. Definition of Terms

Term	Definition
BBB or the bank	The British Business Bank plc ("BBB" or "the bank") and its subsidiaries.
Colleagues	Permanent Employees, Fixed Term Contract, Apprentices, Interns, Secondees-out, Secondees-In, Board Members, Non-Executive Directors, Contractors, Temps and Professional Services.
Data Model	A formal representation of a set of business objects or data elements needed to satisfy a business objective, as well as their relationships to one another.
Data Concept	Logical groupings of data elements that describe a business concept.
Data Element	A business-friendly logical definition of data. It is typically associated with one or more attributes / columns / fields within datasets that describes the meaning or semantics of the fields.
Term (or Business Term)	Terminologies used across the business, can be associated with a variety of data assets.
Critical Data Element (CDE)	"CDE" is a common term which refers to a Data Element that has been deemed critical. Where there is an enhanced governance standard, such as that driven by a regulatory program, an appropriate identifier needs to be applied to the CDE(s) reporting and compliance purposes. The definition of any such enhanced requirements, e.g., consumer data testing and front-to-back (FTB) lineage, will be driven and owned by the sponsoring Division or Corporate Function.
Data Integrity	Means that BBB's data is accurate and suitable for the purpose for which it is processed.

Version control

Version Date	Author	Description	Approved by	Date approved	Date published
11/06/2021		First draft			
15/09/2021	[redacted]	Revised Section 7. Definition of Terms to be consistent with 'the Policy'	SW		
22/10/2021	[redacted]	Version 1.0 Final Approved by BBB Board on 22 October 2021	BBB Board	22/10/2021	11/11/2021
22/02/2023	[redacted]	Version 2.0 DRAFT for PRG Annual Policy Review			

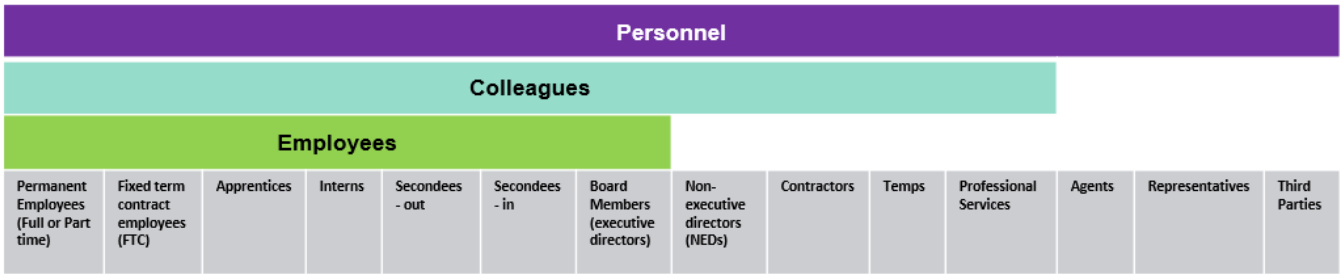
Appendix 1 - Policy Scope Categories

Accurate policy scoping is important to ensure that those who might be affected by a policy are identified and considered.

The proposed approach is to capture all potential individuals and entities that could fall within scope of a BBB policy into 3 distinct categories:

- Personnel
- Colleagues
- Employees

Policy owners will be responsible for identifying which category is applicable to their policy.



The Policy Governance Framework will capture the detailed list of which individuals fall within each category for reference. (Slide 3).

Policy Scope wording:

This policy applies to all BBB entities, operations and **Personnel**.

This policy applies to all BBB entities, operations and **Colleagues**.

This policy applies to all BBB entities, operations and **Employees**.