

# Defining metadata

## Definition

Defining metadata are [metadata](#) that enables interpretation of the meaning of data to provide information.

## Purpose

The purpose of defining metadata is to enable consistent interpretation of data and thereby provide information. Which comes first, the data or the metadata? In principle, the defining metadata is created in the data design phase as specification of the implementation and is maintained as reference source for users of the data.

## Life cycle

| Phase | Activity   |
|-------|--|
| Plan  | <ul style="list-style-type: none"> <li>• Compose defining metadata</li> <li>• Establish defining metadata</li> </ul> |
| Do    | <ul style="list-style-type: none"> <li>• Use defining metadata</li> </ul>  |
| Check | <ul style="list-style-type: none"> <li>• Evaluate defining metadata</li> </ul>                                       |
| Act   | <ul style="list-style-type: none"> <li>• Revise defining metadata</li> </ul>   |

## Characteristics

| Characteristic                    | Requirement   |
|-----------------------------------|---|
| Accuracy of defining metadata     | Defining metadata should be accurate enough.            |
| Completeness of defining metadata | Defining metadata should be complete.                   |
| Unambiguity of defining metadata  | Defining metadata must not be open to misinterpretation |
| Clarity of defining metadata      | Defining metadata should be legible and understandable  |

## Relations

|                   |                             |   |
|-------------------|-----------------------------|---|
| Defining metadata | is subtype of               | <a href="#">metadata</a>                  |
| Defining metadata | has as input                | <a href="#">data quality requirements</a> |
| Defining metadata | has as input                | <a href="#">data quality policy</a>       |
| Defining metadata | is output of                | design processen                          |
| Defining metadata | is input to                 | <a href="#">data quality objectives</a>   |
| Defining metadata | is input to                 | <a href="#">data quality policy</a>       |
| Defining metadata | is input to                 | <a href="#">data quality rules</a>        |
| Defining metadata | is input to                 | <a href="#">data quality monitoring</a>   |
| Defining metadata | is input to                 | <a href="#">data issues</a>               |
| Defining metadata | is input to                 | <a href="#">awareness of data quality</a> |
| Defining metadata | is input to                 | <a href="#">data cleansing</a>            |
| Defining metadata | are a basis for determining | <a href="#">data quality rules.</a>       |

|                   |   |   |
|-------------------|---|---|
| Defining metadata | provide standards for   | <a href="#">data quality monitoring</a>   |
| Defining metadata | provide criteria when resolving                                   | <a href="#">data issues</a>               |
| Defining metadata | creates   | <a href="#">awareness of data quality</a> |
| Defining metadata | provide a basis for the selection of                              | <a href="#">critical data elements</a>    |
| Defining metadata | provide criteria to be applied in                                 | <a href="#">data cleansing</a>            |
| Defining metadata | are guided by   | <a href="#">data quality policy</a>       |
| Defining metadata | are guided by   | <a href="#">data quality requirements</a> |
| Defining metadata | are guided by methodologies provided by                           | design processes                          |
| Defining metadata | can be constrained with regard to availability and application by | <a href="#">data quality objectives</a>   |

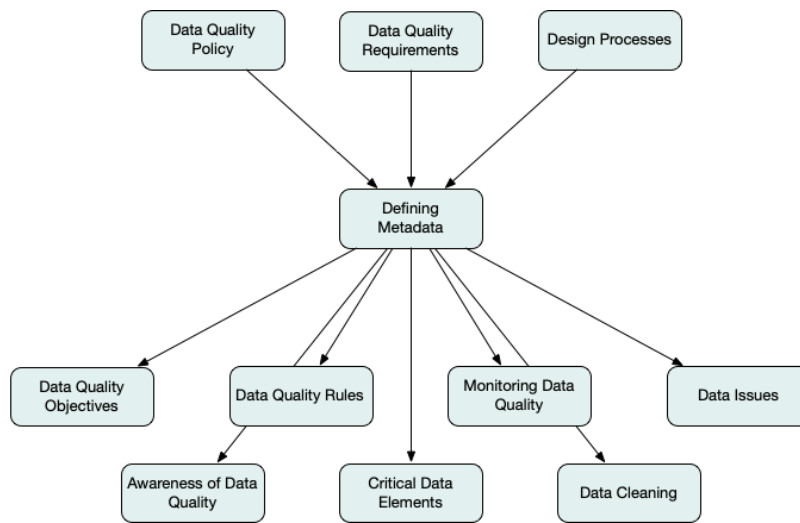


Figure 2 Inputs to and Outputs from Defining Metadata

### An architecture of defining metadata

Figure 3 shows the three levels of defining metadata, conceptual, logical, and technical with the main forms of metadata at each level and their relationships. The diagram also indicates the roles that are primarily engaged with the metadata at each level.

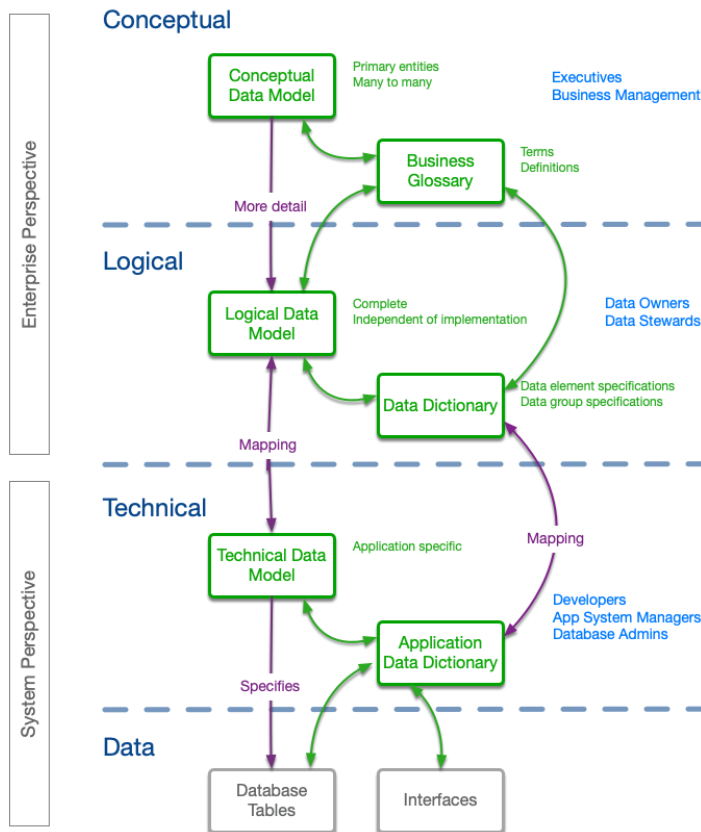


Figure 3 An architecture of defining metadata

### Some forms of defining metadata

#### Data models

The goal of semantic modelling is the creation of a common understanding of the meaning of things, thereby helping people understand each other and done in such a way that the meaning is explicit and accurate and is understood by humans and interpretable by computer systems.

Although the terminology varies from one methodology to another, the elements to be found in most semantic modelling languages are: entities, relations, classes, attributes, terms, and axioms.

#### Examples of data element specifications

|                      |   |
|----------------------|---|
| <b>Identifier:</b>   | DE001   |
| <b>Name:</b>         | Code of a customer as DUNS Number   |
| <b>Definition</b>    | Code identifying a customer according to the Data Universal Numbering System (DUNS) of Dun & Bradstreet.  |
| <b>Data type:</b>    | Numeric   |
| <b>Format:</b>       | Fixed length 9  |
| <b>Value domain:</b> | DUNS code numbers issued by Dun & Bradstreet <a href="https://www.dnb.com">https://www.dnb.com</a><br><a href="https://www.altares.nl">https://www.altares.nl</a> |
| <b>Identifier:</b>   | DE002   |
| <b>Name:</b>         | Loaded weight of a shipping container   |
| <b>Definition</b>    | The weight of a shipping container including its contents according to a weight unit of measure.  |

|                      |  |
|----------------------|--|
| <b>Data type:</b>    | Real number  |
| <b>Format:</b>       | Variable length maximum eight digits with two decimal positions  |
| <b>Note:</b>         | This data element type requires an associated code of a weight unit of measure.  |
| <b>Identifier:</b>   | DE003  |
| <b>Name:</b>         | Code of a unit of measure UN/ECE Rec. 20   |
| <b>Definition</b>    | Code identifying a unit of measure according to UN/ECE Recommendation 20   |
| <b>Data type:</b>    | Alphanumeric   |
| <b>Format:</b>       | Variable length maximum three characters   |
| <b>Value domain:</b> | Code of a unit of measure according to Recommendation No. 20 Codes For Units Of Measure Used In International Trade published by United Nations Economic Commission For Europe (UN/ECE)<br><a href="https://unece.org/trade/uncefact/cl-recommendations">https://unece.org/trade/uncefact/cl-recommendations</a> |

Such data element types are registered and maintained in a data dictionary. They are related to data models as specifications of the implementation of attributes of entities.

The names and definitions of data element types are used in user interfaces and example values may be registered in the data dictionary for use as prompts in electronic forms that are filled manually.

Example DE001 would be part of customer master data. It might be the primary identifier of a customer record or may be a secondary identifier used in credit check processes or as a means of building the hierarchy of related corporate organisations.

Example DE002 would be used during the trajectory of a shipment, for example when placing an order for shipment of a container, in the loading plan of containers in a vessel and in declarations to authorities.

## Story

For some time issues and arguments had been rumbling on about who was responsible for recurring errors and delays in shipments to customers. And Finance and Accounting were increasingly concerned about accounts receivable problems that were attributable to errors in invoicing.

Eventually it became clear to some executives that poor master data quality was causing operational problems. But how should this be fixed? Who was responsible for master data?

A series of workshops involving key managers were organised, facilitated by a Data Management guru. At first the discussions about data were confused. Manufacturing and supply chain management had differing views and terminology about materials and products. Marketing, sales and administration had differences about channels, contracts, prospects and customers.

However, after a few cycles the guru had a series of posters telling a story about the company's data that everyone agreed on. They were surprised when he explained the posters showed conceptual data models of the primary entities of importance to the business and the beginnings of a business glossary. And that these formed the foundation for a Data Governance framework that would lead to effective rollout of Master Data Management within six months.

## References

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