

Data Lineage

Introduction

This factsheet describes knowledge about Data Lineage (DL) in a nutshell. DL is highlighted from different angles in a structured way.

Definition

Data Lineage is a description of the pathway from the data source to their current location and the alterations made to the data along that pathway. (Brackett 2011)

Data Lineage is metadata that identifies the sources of data and the transformations through which it has passed up to the point of consumption. (DAMA-NL, 2020)

Backward DL is data lineage that describes where data come from. Forward DL is data lineage that describe where data are used.

Horizontal DL is what is generally seen as Data Lineage. Vertical DL is a description of the relationship between the concept data model, logical data model and application data model.

Synonym

Data chain

Purposes

- To be able to conduct an impact analysis when making changes to data structures, data flows, or data processing.
- To identify opportunities for improvement in the existing data flow.
- To be able to investigate root causes of data issues.
- To be able to determine the reliability of data, based on its origin.
- To identify personal information (GPDS).
- To support migration of applications and to identify “dead-ends”.
- To be compliant with standards that require DL.
- To enable Data Lifecycle Management

Procedure to manage Data Lineage

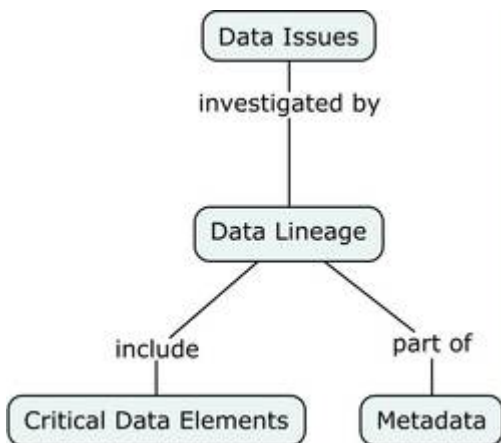
| Phase | Activity |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Plan | <ul style="list-style-type: none"> * Define the scope * Select a way to store the DL information, e.g., by an editor or in a DL tool * Collect the relevant metadata * Enter, change, or delete the metadata * “Stitch the nodes” |
| Do | * Use the DL for its purpose |
| Check | * Evaluate the effectiveness of the DL |
| Act | <ul style="list-style-type: none"> * Adapt the DL * Maintain the DL |

Characteristics and requirements

| Characteristic | Requirement |
|-----------------|---------------------------------------------------|
| Completeness | DL is complete regarding the scope. |
| Maintainability | DL can be maintained efficiently. |
| Clarity | DL can be interpreted easily (zooming, filtering) |

Relationships

- **DL** is part of the Business or Technical **Metadata**.
- **DL** include all data elements but especially **Critical Data Elements**.
- The root cause of **Data Issues** can be investigated by **DL**.



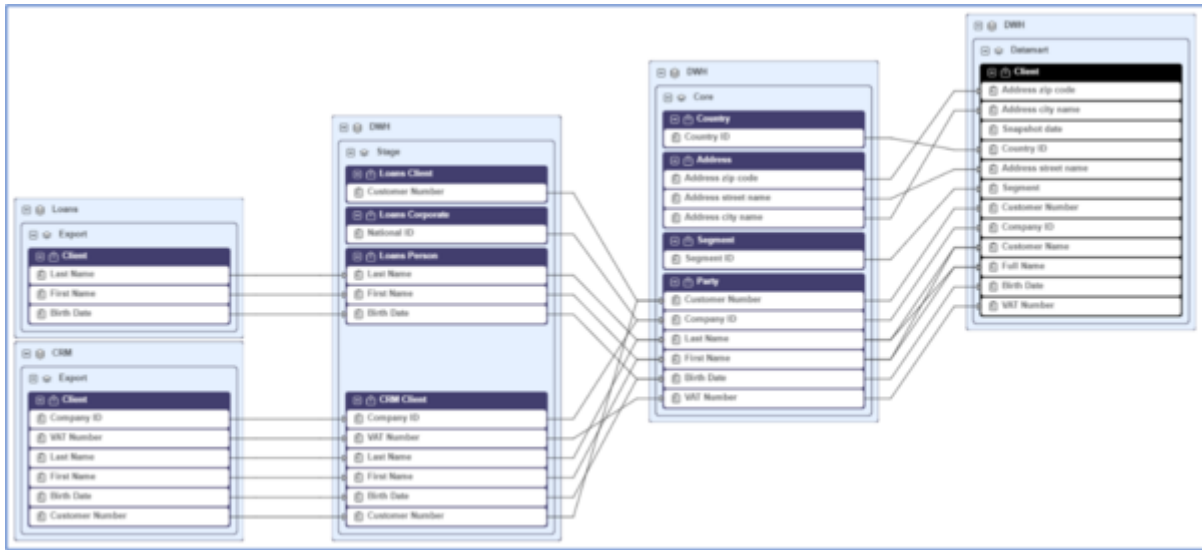
Content

DL answers the 5 W's of data:

1. Where does the data come from or where does it go?
2. Who uses it?
3. When was it created?
4. What information does it contain? What transformations are executed?
5. Why does it exist?

Examples

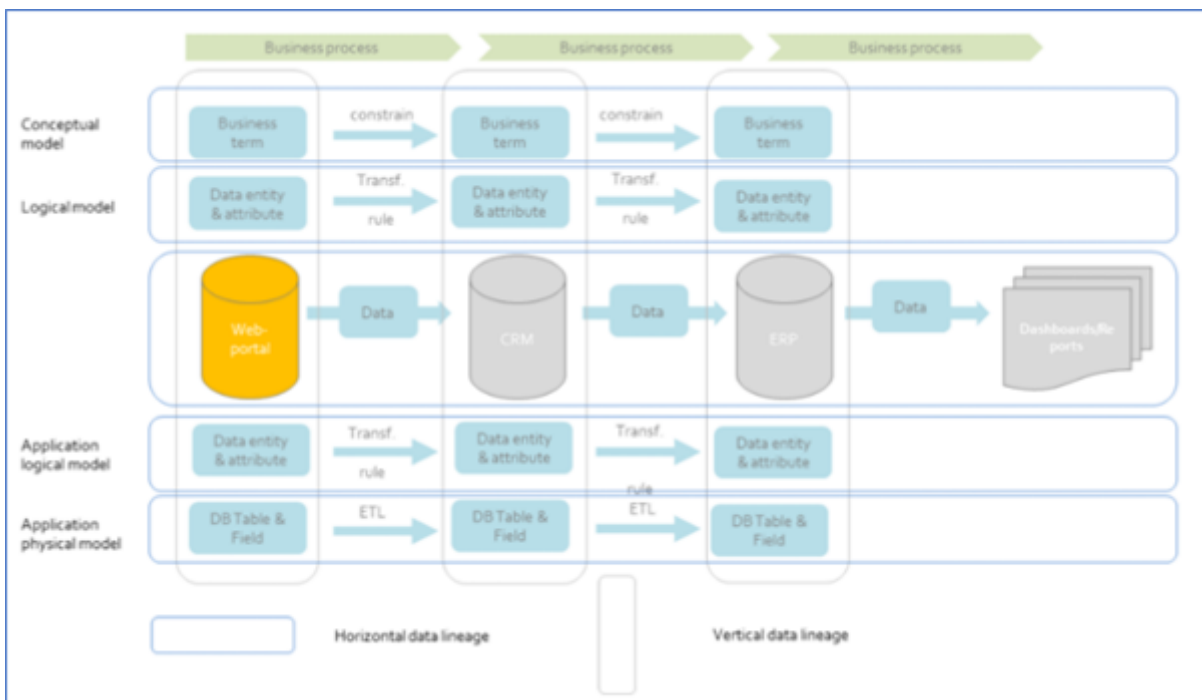
Example 1: Horizontal data lineage



Example 2: Horizontal data lineage



Example 3: Horizontal and vertical data lineage



Story

Legislation requires the Valencia bank to report monthly to its regulator, the central bank. The regulator, however, also wants to know how these reports have been produced and where the data comes from. This is to assess the quality of the data.

Because the reports are generated by complex data flows, the bank decides to apply data lineage to map these flows and make them visible. It soon turned out that fields with the same meaning had different names in the systems involved.

Nevertheless, it was possible to link the fields and it became clear where the reported data came from. The bank can now satisfactorily inform the supervisor about the origin of the reported data. A data steward is made responsible for the maintenance of the data lineage in the tool, so that the metadata is kept up to date.

Data lineage also proves to be useful when making changes to the systems. The impact of changes in the systems downstream can be understood more quickly.

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