# Reporting Steps

## ETL

ETL is the act of extracting raw data, transforming and loading into an analytic data store for further analysis.

Query Editor (Power BI), Power Query (Excel-Add-In), “Get & Transform” (Newer Exel-Versions), “Get Data Experience” (SSAS Tabular) are all different names for the same thing. They look almost the same and are used as GUIs to program code in a language usually referred to as “M”. The engine behind of it is called “Mashup Engine”.

## Analytic Data Store (ADS)

An Analytic Data Store is data at rest that is prepared for querying. ADS can handle many different and complex queries and delivers results reliably within a very short time.

Performance depends on two aspects: Technology and Data Model.

Technology can be any relational database, a specialized Database (e.g. SSAS Molap) or, since 64bit-Systems became common, In-Memory-Databases (e.g. SSAS Tabular).

Data Modelling (aka “Multidimensional Modelling”) is the process of transferring the original raw data into a database structure that supports querying. This usually means the creation of a star schema or snowflake schema. The quality of the data model, and therefore the performance depends mainly on the skills of the developer.

## Semantic Layer

A semantic layer is used to translate the technological view on the data structures into a business view. Table names are renamed to Business Entities and Column Names are translated into Attributes of the Business Entities.

In Microsoft technology, the semantic layer and ADS used to be mainly monolithic. Analytic Data Store and Semantic Layer are one piece. That made the use of other ADS like a relational database difficult.

However, Business Objects always had that separation, called “Universe”. In Power BI, there now is the option to separate both steps using path 3 or path 4 (in combination with 9 or 10).

## Report Creation

Report Creation is the process to create Reports and Analysis on top of an Analytic Data Store using the Semantic Layer.

## Report Distribution

Using Report Distribution, Report Creators can publish reports and dashboards safely to authorized End Users. They control data refresh schedules and set read permissions.

# Data Movement

## Pull Data

Pulling data means that the process of getting data from the source is initiated by the reporting side. This can be done by a user clicking on “refresh data” or by leveraging a schedule. The source remains passive.

## Push Data

Pushing data means that the source system actively sends data to the reporting side. The reporting side remains passive in terms of data acquisition. Nevertheless it still displays data to End Users.

# Roles

## Raw Data Owner

The (Raw) Data Owner is responsible for the source data. He has to commit to an interface to the reporting side. This way data preparation can take place in the next step.

An interface is usually better than full access to the source. Usually, only a small subset of data is necessary for reporting. Making more data available than necessary may introduce regulatory issues.

## Data Preparation

Data Preparation is also known as ETL development. It describes all tasks to extracting data from sources, combining different sources, cleansing and transforming data to meet business requirements. Finally, data is loaded into an analytic data store and made accessible by a semantic layer for Visualization

## Data Visualization

Also known as “Report Building”, Data Visualization is used to present data so end users can get insights and take action. This can be done using Reports, Dashboards, KPIs, Alerts etc.

## End User

End Users have read Access to Data Visualizations.

# Scenarios

## Corporate BI (CBI)

Corporate BI describes a common usage pattern, where the task of preparing the data is separate from the task to visualize data. Usually Report Design an ETL development are strictly separated by permissions. This way, it is possible to avoid report designers to tweak data in order to change results by accident.

## Self Service BI (SSBI)

The goal of Self Service BI is to push Business Intelligence to the business user and thus reliving the BI department. Instead of relying solely on IT Pros, business user can use SSBI tools to prepare data by themselves. Usually business users leverage Excel to do just that (with all its downsides). There are limits to that approach, that requires BI Pros to solve the cases when solutions are getting big or complex.

## Development

Development – in this case - refers to the necessity of programmers to implement the push of data in a source system.

# Paths