

Annex I

Example on how to navigate the BIRD process

In this Annex we will explain how to navigate the BIRD process from input to output using a simple example. The example will include a reference to the derivation of the Small-Medium Enterprise (SME) indicator.

To fulfil FINREP reporting requirements, a bank should be able to identify, for example, whether a counterparty is classifiable as a small-medium enterprise (SME). The European Commission defines micro, small and medium-sized enterprises (SMEs) in the EU Recommendation 2003/361. In particular, the classification is based on different concepts being primarily the number of employees and annual turnover and/or balance sheet total but also on other information. In practice, this means that if a bank stores in its system these pieces of information the Enterprise size classification can be derived for reporting purposes. Moreover, the AnaCredit reporting requirements and regulation state that the enterprise size is reported in accordance with the SME classification provided in the above-mentioned Commission Recommendation.

How is this information included in the different BIRD Layers?

The **BIRD Logical Data Model (LDM)** contains extensive and complete information about the business concepts (and how they relate to each other) to be provided as “raw” data from banks internal system as they are relevant for fulfilling the regulatory reporting requirements covered by the BIRD. In our example we assume that these concepts are the number of employees, annual turnover, and the balance sheet total. Moreover, the LDM structure embeds some additional information, such as the applicability of such business concepts only to certain type of counterparties. Via the LDM we can understand that these concepts are applicable to *Organizations* and *Natural persons that are self-employed*, while it cannot be reported in case a natural person is non-self-employed.

Once all “raw” information is described in the LDM, all derivable business concepts are then also included in the **BIRD Enriched Logical Data Model (ELDM)** which are needed to fulfil reporting requirements. Hence, the ELDM resembles the LDM but also includes the enriched information. Of course, derived concepts can also be treated like input and therefore must not be derived offering a potential user to pick an individual starting point of the BIRD process. Banks using BIRD indeed have the possibility of populating the model either with “raw” information, e.g., number of employees, annual turnover, and the balance sheet total, as well as with the enterprise size directly. In case they decide to adopt the first approach, a calculation should be applied to derive the concept of enterprise size, while if they decide for the second approach the information on the enterprise size is ready to be used and no calculation is needed. One may think about the ELDM as the layer containing all the information needed by ALL regulatory reports described in BIRD.

The **BIRD Input Layer (IL)** includes the same business components as the LDM. However, the model does include fewer structural and relational properties, for example it does not contain the information about the non-applicability neither of annual turnover, number of employees, and

balance sheet total to non-self-employed natural persons. Practically, the model is however more compact and easier to browse.

As for the IL, the **BIRD Enriched Input Layer (EIL)** contains the same business components as the ELDM but in a more compact way.

The bridge between the LDM and IL, as well as the ELDM and EIL is created in an automated fashion by the so-called **Forward Engineering** procedure. In practice, the IL and EIL are built via a series of methods combining denormalization and additional validation rules starting from the LDM and ELDM. This results in an IL/EIL being more compact (“wrapped-up”) compared to the LDM/ELDM, meanwhile ensuring semantic equivalence and lineage between the LDM and the IL and between the ELDM and the EIL.

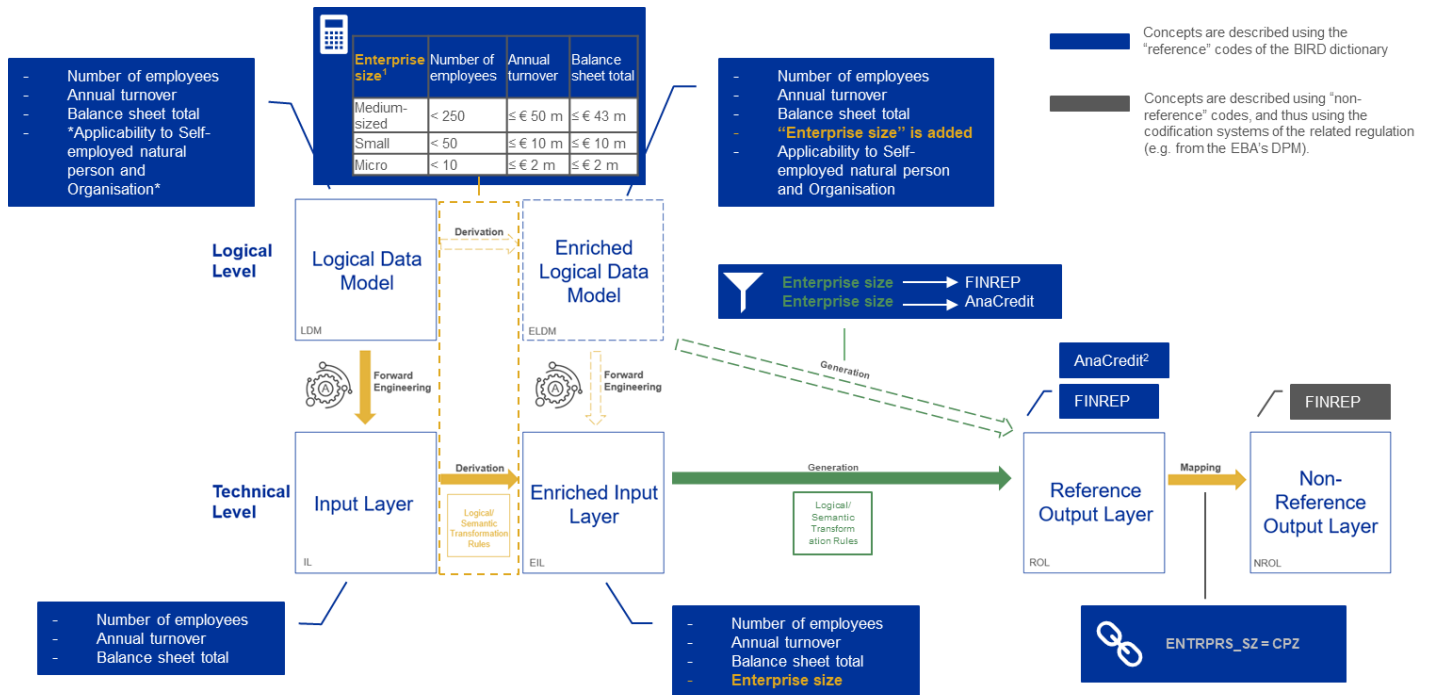
Moreover, the IL and EIL, similarly to the LDM and ELDM, are linkable via transformation rules. Indeed, the so-called **Derivation transformation rules** describe the operations necessary to compute derived attributes starting from “raw” data (i.e., enrichment). Following our example, this would be a formula to compute the enterprise size based on the number of employees, annual turnover, balance sheet total, and all the other necessary information.

The last step of the BIRD process is the generation of the output. As mentioned before, once at the ELDM or EIL, all the business concepts needed for reporting are ready to be used. For example, the enterprise size is needed to fulfil both FINREP and AnaCredit requirements. The **BIRD Reference Output Layer (ROL)** describes the different regulatory reporting requirements, i.e. via the BIRD ROL one can distinguish what are the concepts required for FINREP and what are instead the ones to be reported in AnaCredit. For example, while the enterprise size concept is requested by both reporting frameworks, FINREP contains information on both Loans and Advances, while AnaCredit requirements request banks to report information only on Loans. This split on the type of instrument occurs at the level of the output.

In particular, the process of filtering concepts from the EIL and the ELDM to generate the different reports is described by the **Generation transformation rules**. They create the output by filtering, selecting, and performing simple mathematical operations on the content of the EIL/ELDM, therefore representing the bridge between the ELDM/EIL and the ROL.

The BIRD LDM, ELDM, IL, EIL, as well as the ROL are all described by using the “reference” codes of BIRD representing a standardised language to describe same concepts in the same way. However, the BIRD process includes the original regulatory reporting requirements as well, using the codification systems of the related regulation (e.g., from the EBA’s DPM), the so-called ‘non-reference codes’. This is what is described in the **BIRD Non-Reference Output Layer (NROL)**. In practice, the ROL is a syntactically and semantically integrated version of the original reporting requirements.

Mappings in BIRD represent a specialised type of transformation rules that are needed to translate dictionaries that are not semantically integrated into the “reference” dictionary of the BIRD (i.e., semantically integrated). They represent the link between the ROL and NROL. For example, mappings tell the user that what the BIRD dictionary refers to as *ENTRPRS_SZ* (*Enterprise size*) is named *CPZ* (*Size of counterparty*) in the EBA’s DPM.



¹ This represents a simplified example, as the calculation of the enterprise size includes more input information

² Please note AnaCredit is not part of the NROL, as it is originally described using the same dictionary of BIRD, therefore mappings are not needed.