

# Nesma on sizing

## Part 2: Counting topics

In this whitepaper Nesma presents information to enlarge your knowledge about counting topics related to sizing and to support your activities in this area.

The information is structured around three subjects:

1. Counting Data Functions
2. Treating Physical Media
3. Counting “And/Or” Queries

### 1. Counting Data Functions

This topic describes how groups of data should be combined into Logical Files (Data Functions).

#### The counting question

The counting question is: Suppose one has got two logical groups of data that are maintained within the application. How should one count these groups:

- As two ILFs (Internal Logical Files), each with one RET (Record Element Type)
- As one ILF, with two RETs.

(A similar question is how to count two logical data groups that are maintained outside the application boundary: as one EIF with two RETs, or as two EIFs with one RET each).

#### The counting guideline

Nesma has done lots of research, and succeeded to develop a guideline, that has proved to be very useful in practice, and leads to repeatable FPA counts among different FPA counters. The IFPUG has adopted this guideline starting with IFPUG CPM 4.3.

Nesma CPM 2.3 explains this guideline extensively, and illustrates it with several examples. On this page Nesma explains you in short the essential thought of this guideline, so that you can use it yourself when counting function points.

Logical groups of data, or entity types, are examined as to whether they are a data function on their own or whether together, with one or more related entity types, they make up a data function (an internal logical file or an external interface file).

The essence of the guideline is:

Suppose we've got two logical groups of data A and B.  
If B has significance for the organization also apart from A,  
then count A and B separately each as one data function (ILF or EIF)  
with one RET each  
else count A and B together as one data function (ILF or EIF) with two RETs.

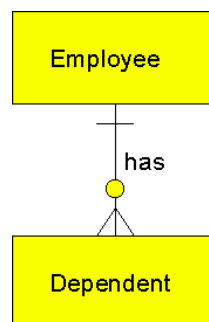
A data function may also consist of more than two logical groups of data. Count as many RETs as enclosed logical data groups.

By the way: logical groups of data that are code tables (like country code, country name) should always be grouped into one code tables ILF (for all code tables that are maintained by the application) and one code tables EIF (for the code tables that are referenced by the application, but are maintained outside the application boundary). See the section dedicated to this counting issue.

### ***Example 1: The Human Resources System***

A Human Resources System maintains Employee and Dependents information.  
An Employee may have zero, one or more Dependents.  
Of course, a Dependent must be assigned to an Employee.

In an Entity Relationship Diagram this may be shown as follows:



When an Employee leaves the company, the Employee information is deleted. Suppose the business rule is, that the Dependent's information may be removed as well, because the company is no longer interested in this information, when the Employee leaves.

In this case, apparently, Dependent has no separate significance to the business apart from Employee.

In situations like these, count 1 ILF with 2 RETs (Employee, Dependent).

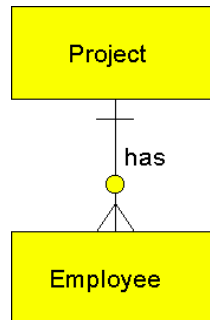
By the way, an ILF is counted (and not an EIF), because the Human Resources System maintains the information).

### ***Example 2: The Project Resources System***

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A Project Resources System maintains Project and Employee information.  
There may be zero, one or more Employees assigned to a Project.  
An Employee must be assigned to exactly one Project.

In an Entity Relationship Diagram this may be shown as follows:



When a Project is finished, the Project information is no longer needed and may be deleted. However, the business rule is, that Employee information may not be deleted at that time. As long as there are Employees linked to the Project, the Project information may not be deleted.

In this case, apparently, Employee has a separate significance to the business apart from the Project he had been working for. The Employee information is still needed, even when the business is no longer interested in the information of that Project. The Employee will continue working for the company, and will be assigned to another Project.

In situations like these, count 2 ILF each with 1 RET.

By the way, ILF's are counted (and no EIFs), because the Human Resources System maintains Project- and Employee information).

## 2. Treating Physical Media

Nesma has done lots of research, and succeeded to develop a guideline, that has proved to be very useful in practice, and lead to repeatable FPA counts among different FPA counters. This guideline fits within the framework of the IFPUG CPM 4.3 guidelines. IFPUG so far has not developed guidelines for this issue.

NESMA CPM 2.3 explains this guideline extensively, and illustrates it with several examples. On this page Nesma explains you this guideline in short, so that you can use it yourself when counting function points.

For the Nesma, the physical medium does not, in and of itself, provides additional functionality. That's why Nesma developed the following counting guidelines:

The same input read from different physical media is counted as only one external input, if the input data element types and the logical processing are the same.

The same output written to different physical media is counted as only one external output (or external inquiry) when the logical layout and the logical processing are the same.

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### **Example: Accounts Receivable Application**

A function of an Accounts Receivable Application generates invoices.

Each invoice consists of the following information: invoice number, order number, order date, calculated order amount.

The user requires the ability to send this information to a floppy, tape cartridge or paper.

One should count one EO only, because the information is equal in all situations (same data element types) from user point of view, the logical way of processing is equal.

## **3. Counting “And/Or” Queries**

This section describes how queries with multiple selection criteria are counted within FPA.

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This is often an issue; e.g., a selection screen with state-id and surname. The user can enter one or both of these items in order to select customers (e.g., show me all customers in Washington DC).

Should each and every distinct “and/or situation” be considered a separate EO/EQ or should only one EO/EQ be counted?

The Nesma uses a go between:

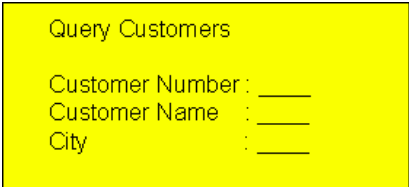
“When the user has more options (i.e., an “and/or situation”), count the selections that mutually exclude each other. Each selection or combination of selections that exclude all others is counted separately”.

The advantage of this guideline is, that it prevents an “explosion” of functions. Not applying a rule like this would result in  $1 + 4 + 6 + 4 + 1 = 16$  functions when the selection screen would provide the ability to query on 4 fields only!

### **Example: Querying Customer**

A user requires functionality to query Customer data by entering:

**customer number**  
OR (exclusive)  
**customer name**  
AND/OR  
**city**



Query Customers

Customer Number : \_\_\_\_\_

Customer Name : \_\_\_\_\_

City : \_\_\_\_\_

Although there are three selection field, and although there are  $1 + 3 + 3 + 1 = 8$  possible combinations of zero, one or more selection fields, one should count two transactional functions:

1. Query on customer number
2. Query on name/city