

# Road map of the MDM (implemented in a design ROLAP) of FINREP 2012 and Solvency II (01-07-2012) with validations, Proof of Concept.

## 1. Introduction.

This document is divided in two parts, the first for Solvency II and FINREP 2012<sup>1</sup> and that is enclosed in this page. In earlier works is analysed this road map implemented in the Relational Model, not with a design ROLAP. So, in “*Proof of Concept, XBRL report vs. RDBMS*”, “*Validation of a XBRL Document Instance in a RDBMS. Proof of Concept*” (Here is studied in an extensive form the mapping of formulas, but with FINREP 2008), and “*Automation and mapping from the data model of the XBRL specification in Database*” there are a set of proof of concepts in the Relational Model<sup>2</sup>.

## 2. Solvency II.

This section consists of three subsections. The first is to obtain from the taxonomy the dimensions, attributes of dimension and the base attributes (*primary items*). The

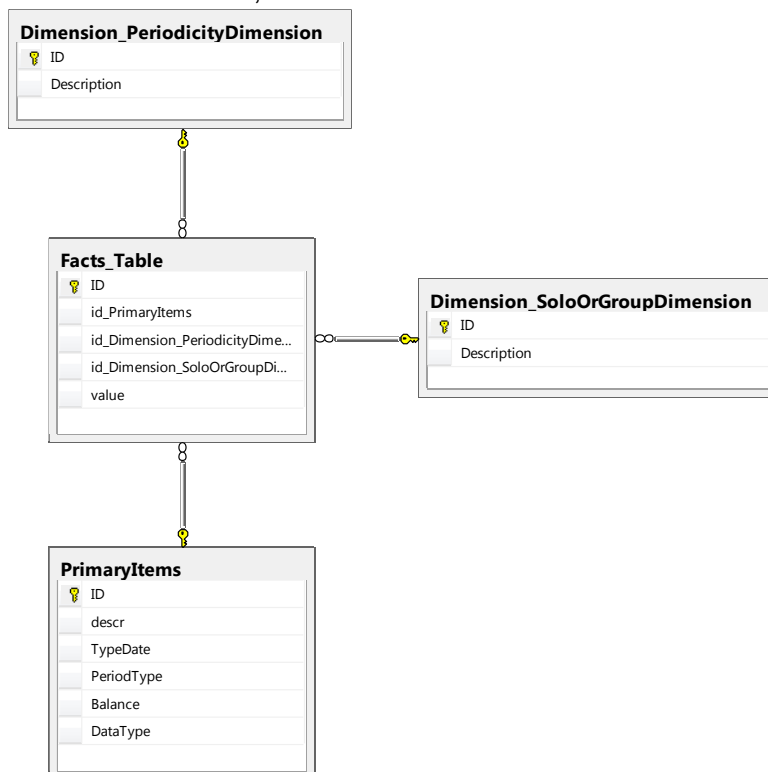


Figure 1. MDM of Solvency II (01-07-2012).

machine). Then, from this process obtains two scripts:

MDM of this taxonomy is shown in the figure 1.

### 2.1. Basic infrastructure of the MDM<sup>3</sup>.

From *Arelle* is obtained the file with dimensions, dimension attributes (*domain-member*), and the basic concepts (*primary items*). From *Arelle*<sup>4</sup> is obtained the file *dimensionesSolII.txt* (*Automation and mapping from the data model of the XBRL specification in Database*<sup>5</sup>, and *Proof of Concept, XBRL report vs. RDBMS*<sup>6</sup>). With the process *xbrls010\_r2.vbs* run through *xbrls010.cmd* (the reader will be change the path according to its

<sup>1</sup> <http://www.eurofiling.info/finrepTaxonomy/taxonomy2012.shtml>.

<sup>2</sup> <http://www.eurofiling.info/finrepTaxonomy/taxonomy2012.shtml>.

<sup>3</sup> *xbrls010\_r2.rar*.

<sup>4</sup> <http://arelle.org/>.

<sup>5</sup> [http://www.openfiling.info/?page\\_id=286](http://www.openfiling.info/?page_id=286).

<sup>6</sup> [http://www.openfiling.info/?page\\_id=286](http://www.openfiling.info/?page_id=286).

- *xbrls010\_create\_Solvency.sql*. This script creates the tables in the database *TXBRL\_Solvency\_II* (previously created). Then in this case are created two dimensions and the table of primary items and the table of facts.
- *xbrls010\_insert\_Solvency.sql*. This script inserts the attributes of dimension of the dimensions and the primary items.

## 2.2. Load of the facts in the MDM<sup>7</sup>.

With XBRL document instance of sample, *instanceSolvencia.xbrl*, through the Visual Script *xbrls010\_r3.vbs* is obtained a file with the facts to insert, *xbrls010\_insert\_Facts\_Solvency.sql*. If this script is executed, then the table of fact will be 6 facts.

## 2.3. Validation of the formula of Solvency II.

In the sample of this taxonomy only is obtained a formula, really one only assertion:  
*valueAssertion Assertion\_AS17A*  
*abs( (\$va\_0) - ((\$va\_1 + \$va\_2)) ) le 3000*

```
factVariable $va_0      va_0 fallbackValue =0
conceptName           Concept_BS_C1_AS17A p-BS_C1:AS17A
```

```
factVariable $va_1      va_1 fallbackValue =0
conceptName           Concept_BS_C1_AS17 p-BS_C1:AS17
period               period_filter   true   false   true()
```

```
factVariable $va_2      va_2 fallbackValue =0
conceptName           Concept_BS_C1_AS18 p-BS_C1:AS18
```

```
precondition Assertion_AS17A_existence_precondition false() or $va_1 instance of
node()* or $va_2 instance of node()*
```

And this formula means that there are three concepts (*primary items*) involve: AS17A (*\$va\_0*), AS17 (*\$va\_1*), and AS18 (*\$va\_2*).

The formula will be evaluate if there are data in *\$va\_1*, or in *\$va\_2*, if there are not data, then AS17, and AS18 are not evaluated.

The formula to evaluate is:

$$\text{abs}( \$va_0 ) - ( ( \$va_1 + \$va_2 ) ) \leq 3000$$

In the document instance there are two examples:

- First verification  $| (42000 - (12345+29655)) | \leq 3000$ , this is correct.
- Second verification  $| (100000 - (666+69000)) | \leq 3000$ , this is incorrect.

The script *xbrls003.cmd* generates two store procedures *xbrls003\_SOL\_procedure.sql* and *xbrls003\_SOL\_validation.sql*. The first generate the set of store procedures of a XBRL document instance, for a report. The second execute the set of store procedures for validating a report. It is necessary to modify the *xbrls003.cmd*, the *paths* according to execute the program Visual Basic Script.

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<sup>7</sup> "xbrls010\_r3\_facts.rar".

### 3. FINREP 2012.

This section consists of three subsections. The first is to obtain from the taxonomy the dimensions, attributes of dimension and the base attributes (*primary items*). The MDM of this taxonomy is shown in the figure 2.

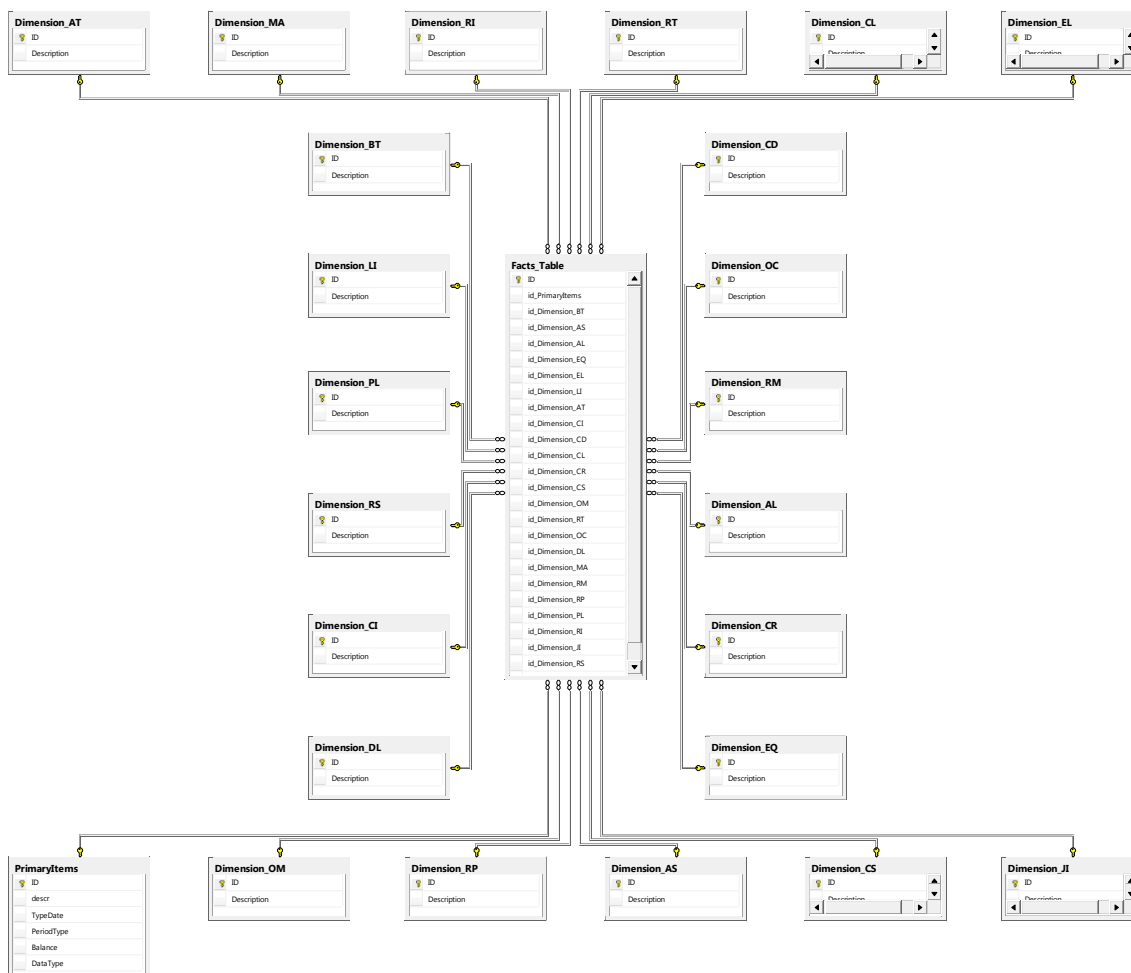


Figure 2. MDM of FINREP 2012.

#### 3.1. Basic infrastructure of the MDM<sup>8</sup>.

From *Arelle* is obtained the file with dimensions, dimension attributes (*domain-member*), and the basic concepts (*primary items*). From *Arelle*<sup>9</sup> is obtained the file *dimensionesSolll.txt* (*Automation and mapping from the data model of the XBRL specification in Database*<sup>10</sup>, and *Proof of Concept, XBRL report vs. RDBMS*<sup>11</sup>). With the process *xbrls010\_r2.vbs* run through *xbrls010.cmd* (the reader will be change the path according to its machine). Then, from this process obtains two scripts:

<sup>8</sup> *xbrls010\_r2.rar*.

<sup>9</sup> <http://arelle.org/>.

<sup>10</sup> [http://www.openfiling.info/?page\\_id=286](http://www.openfiling.info/?page_id=286).

<sup>11</sup> [http://www.openfiling.info/?page\\_id=286](http://www.openfiling.info/?page_id=286).

- *xbrls010\_create\_finrep.sql*. This script creates the tables in the database *TXBRL\_Report\_II* (previously created). Then in this case are created twenty three dimensions and the table of primary items and the table of facts.
- *xbrls010\_insert\_finrep.sql*. This script inserts the attributes of dimension of the dimensions and the primary items.

### 3.2. Load of the facts in the MDM<sup>12</sup>.

With XBRL document instance of sample, *instanceFinrep.xbrl*, through the Visual Script *xbrls010\_r3.vbs* is obtained a file with the facts to insert, *xbrls010\_insert\_Facts\_Finrep.sql*. If this script is executed, then the table of fact will be 6 facts.

### 3.3. Validation of the formula of FINREP 2012.

In the sample of this taxonomy only is obtained a formula, really one only assertion:

*Formula object t03\_hr01*

*\$CarryingAmount = \$UnimpairedAndNotPastDue + \$UnimpairedAndPastDueUnder90Days + \$UnimpairedAndPastDueBetween90and180Days + \$UnimpairedAndPastDueBetween180and1 Year + \$UnimpairedAndPastDueOver1 Year + \$ImpairedNet*

*,andFilter,,,,andFilter\_8,,,, conceptName,,,,base:mi1  
dPL:x11,,,,dim:PL dRS:x1,,,,dim:RS*

*,,orFilter,,,,orFilter\_3,,,,  
,,,andFilter,,,andFilter\_5,,,,  
dCT:x7,,,,dim:AS dSE:x14,,,,"dim:CS dSE:x14  
,,andFilter,,,andFilter\_6,,,,  
dCT:x22,,,,dim:AS dSE:x1,,,,"dim:CS dSE:x1*

*,,,andFilter,,,andFilter\_7,,,,  
dCT:x3,,,,dim:AS dSE:x1,,,,dim:CS*

*factVariable \$UnimpairedAndNotPastDue fallbackValue =0  
,,explicitDimension,,,,dAT:x20,true,false,,dim:AT  
,,explicitDimension,,,,dTI:eq0d,true,false,,dim:DL*

*,factVariable \$UnimpairedAndPastDueUnder90Days fallbackValue =0  
,,explicitDimension,,,,dAT:x20,true,false,,dim:AT  
,,explicitDimension,,,,dTI:gt0d\_le90d,true,false,,dim:DL*

*,factVariable \$UnimpairedAndPastDueBetween90and180Days fallbackValue =0  
,,explicitDimension,,,,dAT:x20,true,false,,dim:AT  
,,explicitDimension,,,,dTI:gt90d\_le180d,true,false,,dim:DL*

*,factVariable \$UnimpairedAndPastDueBetween180and1 Year fallbackValue =0  
,,explicitDimension,,,,dAT:x20,true,false,,dim:AT  
,,explicitDimension,,,,dTI:gt180d\_le1y,true,false,,dim:DL*

*,factVariable \$UnimpairedAndPastDueOver1 Year fallbackValue =0  
,,explicitDimension,,,,dAT:x20,true,false,,dim:AT  
,,explicitDimension,,,,dTI:gt1y,true,false,,dim:DL*

*,factVariable \$ImpairedNet,,,,factVariable\_12 fallbackValue =0*

<sup>12</sup> "xbrls010\_r3\_facts.rar".

```
„explicitDimension,,,,dAT:x9,true,false,,dim:AT
```

```
,factVariable $CarryingAmount fallbackValue =0  
„explicitDimension,,,,dAT:x3,true,false,,dim:AT
```

This first formula is obtained from *Arellé*<sup>13</sup>, and in this formula can be observed the fields and their values.

- *ValueAssertion* is its name and the formula that it has to carry out.
- After, the *filters* come, this means that validation depends on the *filters*. First is the *filter8*, with an “and” and after the *filter3* with an “or” and the *filters* 5, 6, and 7 are included.

These filters require a special process. These filters are groups of variables that have to carry out the validation. The groups consist of:

- Group 1: filters 8 and 5,
- Group 2: filters 8 and 6,
- Group 3: filters 8 and 7.

The script *xbrls003.cmd* generates two store procedures *xbrls003\_SOL\_procedure.sql* and *xbrls003\_SOL\_validation.sql*. The first generate the set of store procedures of a XBRL document instance, for a report. The second execute the set of store procedures for validating a report. It is necessary to modify the *xbrls003.cmd*, the *paths* according to execute the program Visual Basic Script.

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<sup>13</sup> <http://arelle.org/>.