CONSOLIDATION LEVELS: XBRL, DIMENSIONS AND FILING RULES

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CONSOLIDATION LEVELS OF FINANCIAL STATEMENTS

Options according to XBRL dimensional specificities and filing rules.

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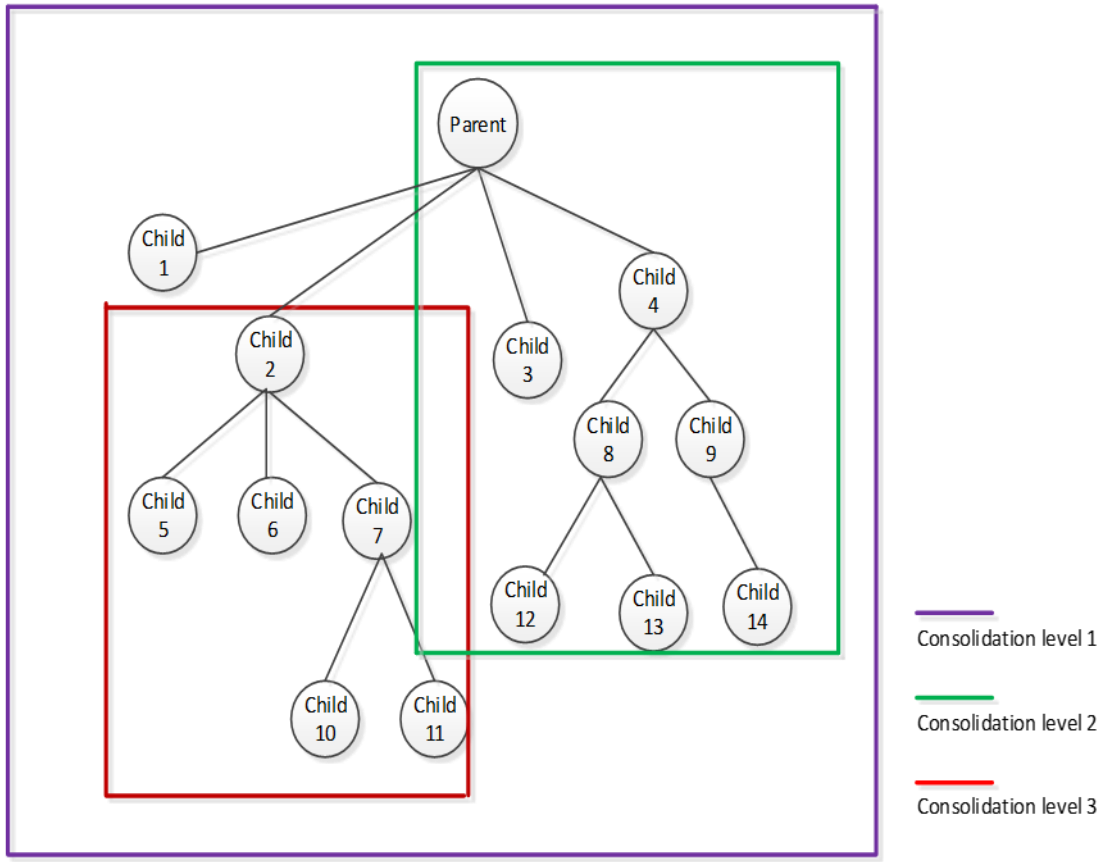
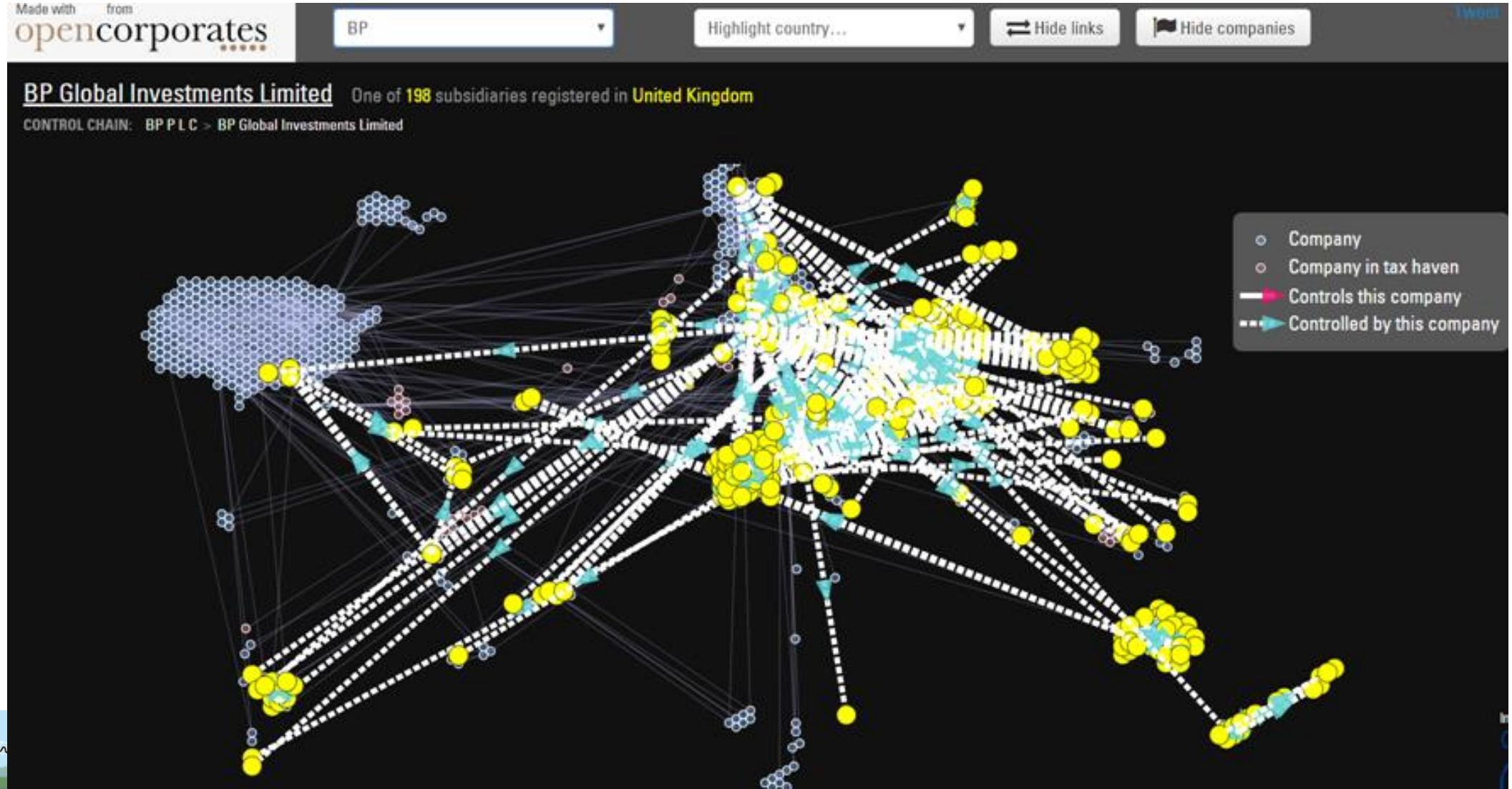
WHAT THE CONSOLIDATION IS



Financial statements of a group of companies may be prepared according to different consolidation levels. The accountancy standards IAS 27 (Consolidated and Separate Financial Statements, 2008) and IFRS 10 (Consolidated Financial Statements, 2011) as well as other GAAP and Regulatory Frameworks are applicable, thus creating different consolidated financial statements with different facts inside.

WHAT HAPPEN IN PRACTICE?



CREATIVITY AT REGULATOR LEVEL

	Scope of consolidation		Entity Properties			
Categories of Reporting Entities	**Consolidation criteria**	**Geographic scope**	**Structure**	**Line of business**	**Origin**	**Residence**
Group of Deposit bank	Group of deposit bank	All	Conventional group	Deposit bank	Domestic	Resident
Consolidation group of Deposit bank	Consolidation group of Deposit bank	All	Consolidation group	Deposit bank	Domestic	Resident
Group of Financing institution	Group of Financing institution	All	Conventional group	Financing institution	Domestic	Resident
Consolidation group of Financing institution	Consolidation group of Financing institution	All	Consolidation group	Financing institution	Domestic	Resident
Group of central body	Group of central body	All	Conventional group	Central body	Domestic	Resident
Financial conglomerate	Financial conglomerate	All	Conventional group	Financial conglomerate	Domestic	Resident
Group of amalgamation	Group of amalgamation	All	Consolidation group	Group of amalgamation	Domestic	Resident
Liquidity subgroups	Liquidity subgroups	All	Consolidation group	Financial institution	Domestic	Resident
Deposit bank including foreign branches	Solo	All	Company	Deposit bank	Domestic	Resident
Deposit bank excluding foreign branches	Solo	Domestic only	Company	Deposit bank	Domestic	Resident
Foreign branch of Deposit bank	Solo	All	Branch	Deposit bank	Domestic	Non-resident
Foreign Credit institution subsidiary of Consolidation group of Deposit bank	Solo	All	Subsidiary	Credit institution	Foreign	Non-resident
Large Financial institution in Consolidation group of Deposit bank	Solo	All	Company	Financial institution	Domestic	Resident
Financing institution including foreign branches	Solo	All	Company	Financing institution	Domestic	Resident
Financing institution excluding foreign branches	Solo	Domestic only	Company	Financing institution	Domestic	Resident
Foreign branch of Financing institution	Solo	All	Branch	Financing institution	Domestic	Non-resident
Foreign Credit institution subsidiary of Consolidation group of Financing institution	Solo	All	Subsidiary	Credit institution	Foreign	Non-resident
Large Financial institution in Consolidation group of Financing institution	Solo	All	Company	Financial institution	Domestic	Resident
Branch of foreign Credit institution engaged in Deposit bank activities	Solo	All	Branch	Deposit bank	Foreign	Resident
Branch of foreign Credit institution engaged in other than Deposit bank activities	Solo	All	Branch	Credit Society	Foreign	Resident
Financial holding company (Credit institutions)	Solo	All	Company	Financial holding (Credit institutions)	Domestic	Resident
Central body (amalgamation)	Solo	All	Company	Central body (amalgamation)	Domestic	Resident
Central body	Solo	All	Company	Central body	Domestic	Resident

LIMITS ON AUTOMATED CONSOLIDATION

If the Company A (creditor) had provided a credit to Company B (debtor) of 100 €, this **amount should disappear in the consolidation**. The Asset of 100 € in Company A is to be compensated with the Liability of 100 € in Company B, being this amount of 100 € annulated in the Consolidation. The **disaggregated information** required for intra-group compensations is **not necessarily disclosed in the financial Statements.**

Many other rules about cross-participations apply. Therefore, a **human** accountant should **check the cross participations** among the Companies included in the Consolidation Level perimeter **and consolidate** the amounts according to the applicable Accounting Principles.

As conclusion, let summarize that, in practical terms, there is **no practical way** to generate a consolidated financial statement **using exclusively** the respective solo **(un-consolidated) financial statements** of a group of companies.

BALANCE SHEET EXAMPLE

MAXIDRIVE CORP.
Balance Sheet
At December 31, 2009
(in thousands of dollars)

Assets	
Cash	$ 4,895
Accounts receivable	5,714
Inventories	8,517
Plant and equipment	7,154
Land	981
Total assets	$27,261
Liabilities	
Accounts payable	$ 7,156
Notes payable	9,000
Total liabilities	16,156
Stockholders' Equity	
Contributed capital	2,000
Retained earnings	9,105
Total stockholders' equity	11,105
Total liabilities and stockholders' equity	$27,261

The header identifies the Entity (MaxiDrive), the type of financial statement (Balance Sheet), the period (fiscal year 2009 ending at December 31) and meaning of the figures (x1,000$).

The body has two columns: Tags and Facts. Each Tag provides (in English) the semantic context for its corresponding numeric Fact. There are also some evident relations. For instance, Assets must be equal to Liabilities plus equity.

If the inventories were disaggregated by the Cartesian combination of 100 countries, 200 products, 15 sizes and 10 colours, the total will be 100 x 200 x 15 x 10 = 3.000.000 of tags.

DIMENSIONAL NOTATION

The traditional matrix notation minimizes the problem by using sub-indexes, in this case with the notation $Inventory_{(Country,Product,Colour,Size)}$. In this paper, a Financial Statement is structured as a Header plus a list of Tags (with and without sub-indexes).

Roughly speaking, an XBRL Instance Document is quite similar, but using XML syntax instead of paper and plain English. Each Tag (also known as Primary Item) is contextualized belonging to a Header (Entity and Period) and having zero, one or more than one disaggregations (known as Dimensions).

DPM goes back when the IT experts started to define XBRL Taxonomies (models) for large Financial Statements, as Supervisory Reports, and soon detected a serious challenge in the modelling process.

WHERE IS THE PROBLEM?

The Supervisory Reporting Frameworks are defined by domain experts, by using in general bi-dimensional Excel Spreadsheets. The experts collapses all the dimensions in the real life model into the **only two dimensions available in a plane spreadsheet (axis X and Y).**

The remaining dimensions (usually known as axis Z) are described in the most imaginative places, as headers, footnotes, explanatory notes or guidelines, even hundreds of pages away or in different documents.

When the IT experts deconstruct the Reporting Spreadsheet, they afford serious **challenges to figure out what are the dimensions actually applicable to all and each particular cell.** The physical proximity of two cells may also create confusions, as their respective axis Z may be very different one of the other.

DPM REDUCED DEFINITION

Member as a defined value, with an associated meaning. Examples: Belgium, Bag, Large, Red

Dimension as a list of one or more no-ordered no-duplicated Members, with an associated meaning. Examples: European Country (Belgium, France, Italy….), Product (Bag, Box, Wallet…), Size (Large, Small), Colour (Red…). Two different Dimensions may share one or more Members.

Dimension-Member is each occurrence of a particular Member in a particular Dimension

Data Point is a container that can store one and only one Fact, identified by a set of one or more no-ordered and unique **Dimension-Members** belonging each one to a unique (no-duplicated) Dimension. The list of Dimension-Members identifying the Data Point gives the semantic context of the Fact.

Data Point Model DPM is an array of no-ordered and unique elements defined as **Data Points** $[\![DP]\!]_p$ where p=1...n being n the number of different Data Points (cardinality of the DPM) where $[\![DP]\!]_i \neq [\![DP]\!]_j$, $\forall i,j \in p$ and $i \neq j$.. **(Sparse Matrix)**

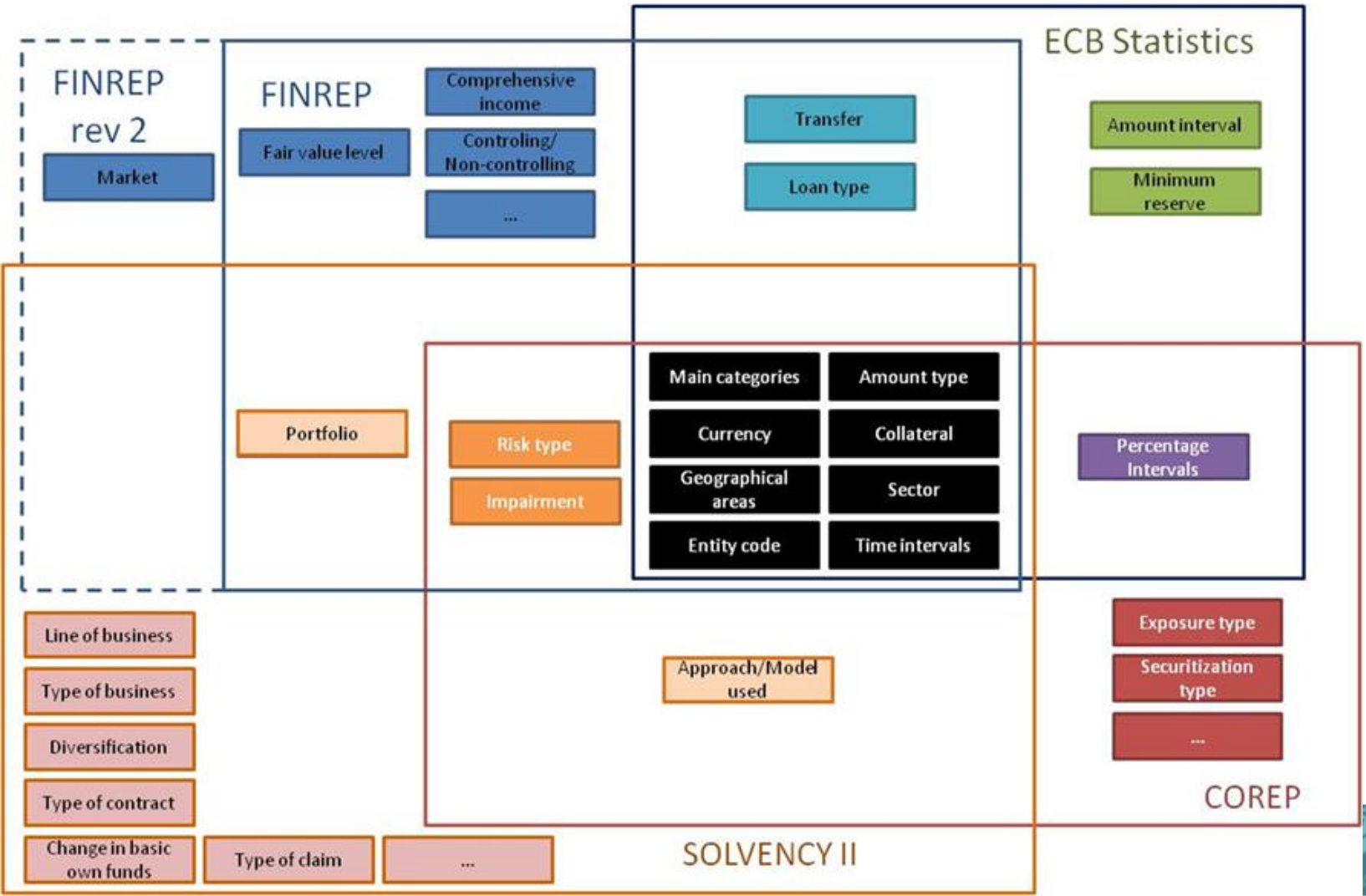
DPM COMPARABILITY

As the order of the Dimension-Members identifying a Data Point is irrelevant, two **Data-Points belonging different DPMs** with the **same set of Dimension-Members** are **identical**, sharing the same semantics, and being **comparable among them**. Hence having the extensionality (extensional equality) property.

Two DPMs may share a common set of Dimension-Members. A Data Point P defined in DPM A is identical to a Data Point Q defined in DPM B if sharing the same identification as set of Dimension-Members.

Facts expressed according to identical Data Points shares the same semantics, and therefore **are comparable** among then

THE QUEST FOR THE HOLY GRAIL



In this figure are represented the shared dimensions of the most relevant European Supervisory Frameworks.

The actual amounts in each fact may be different, principally due to the different Supervisory perspectives, which usually requires the use of different metrics.

However, its comparability and implementation would be largely facilitated by using common dimensions

ENTITY IDENTIFICATION IN XBRL

```
<xbrli:context id="_ctx326">
  <xbrli:entity><xbrli:identifier scheme="http://void">MAXDRIVE CORP.
  </xbrli:identifier></xbrli:entity>
  <xbrli:period><xbrli:instant>2009-12-31</xbrli:instant></xbrli:period>
  <xbrli:scenario> <xbrldi:explicitMember
              dimension="ifrs:FairValueAsDeemedCostAxis">
              ifrs:PreviousGAAPMember</xbrldi:explicitMember>
  </xbrli:scenario>
</xbrli:context>
<ifrs:PropertyPlantAndEquipmentFairValueUsedAsDeemedCost
      decimals="0" unitRef="USD" contextRef="_ctx326">
      792445
</ifrs:PropertyPlantAndEquipmentFairValueUsedAsDeemedCost>
```

EXPLICIT DIMENSION IN EACH FACT

```
<xbrli:context id="c1317">
  <xbrli:entity><xbrli:identifier
scheme="http://standards.iso.org/iso/17442">DUMMY_LEI</xbrli:identifier></xbrli:entity>
  <xbrli:period><xbrli:instant>2018-03-31</xbrli:instant></xbrli:period>
  <xbrli:scenario>
    <xbrldi:explicitMember dimension="eba_dim:BAS">eba_BA:x17</xbrldi:explicitMember>
    <xbrldi:explicitMember dimension="eba_dim:MCY">eba_MC:x465</xbrldi:explicitMember>
    <xbrldi:explicitMember dimension="eba_dim:CNL">eba_CN:x111</xbrldi:explicitMember>
  </xbrli:scenario>
</xbrli:context>
<eba_met:mi290 unitRef="uGBP" decimals="-3" contextRef="c1317">8897000</eba_met:mi290>
```

TYPED DIMENSION IN EACH FACT

```
<xbrli:context id="c1317">
  <xbrli:entity><xbrli:identifier
scheme="http://standards.iso.org/iso/17442">DUMMY_LEI</xbrli:identifier></xbrli:entity>
  <xbrli:period><xbrli:instant>2018-03-31</xbrli:instant></xbrli:period>
  <xbrli:scenario>
    <xbrldi:explicitMember dimension="eba_dim:BAS">eba_BA:x17</xbrldi:explicitMember>
    <xbrldi:explicitMember dimension="eba_dim:MCY">eba_MC:x465</xbrldi:explicitMember>
    <xbrldi:typedMember
        dimension="eba_dim:CNL"><eba_typ:CN>111</eba_typ:CN></xbrldi:typedMember>
  </xbrli:scenario>
</xbrli:context>
<eba_met:mi290 unitRef="uGBP" decimals="-3" contextRef="c1317">8897000</eba_met:mi290>
```

ON ENTITY NAME IN EACH FACT

```
<xbrli:context id="c1317">
  <xbrli:entity><xbrli:identifier scheme="http://standards.iso.org/iso/17442">
    DUMMY_LEI_CN111</xbrli:identifier></xbrli:entity>
  <xbrli:period><xbrli:instant>2018-03-31</xbrli:instant></xbrli:period>
  <xbrli:scenario>
    <xbrldi:explicitMember dimension="eba_dim:BAS">eba_BA:x17</xbrldi:explicitMember>
    <xbrldi:explicitMember dimension="eba_dim:MCY">eba_MC:x465</xbrldi:explicitMember>
</xbrli:scenario>
</xbrli:context>
<eba_met:mi290 unitRef="uGBP" decimals="-3" contextRef="c1317">8897000</eba_met:mi290>
```

ON ENTITY SCHEMA IN EACH FACT

```
<xbrli:context id="c1317">
  <xbrli:entity><xbrli:identifier scheme="http://consolidation.level/CN111">
   DUMMY_LEI</xbrli:identifier></xbrli:entity>
  <xbrli:period><xbrli:instant>2018-03-31</xbrli:instant></xbrli:period>
  <xbrli:scenario>
    <xbrldi:explicitMember dimension="eba_dim:BAS">eba_BA:x17</xbrldi:explicitMember>
    <xbrldi:explicitMember dimension="eba_dim:MCY">eba_MC:x465</xbrldi:explicitMember>
</xbrli:scenario>
</xbrli:context>
<eba_met:mi290 unitRef="uGBP" decimals="-3" contextRef="c1317">8897000</eba_met:mi290>
```

ON <XBRLI:IDENTIFIER> IN EACH FACT

```
<xbrli:context id="c1317">
  <xbrli:entity><xbrli:identifier      consolidationlevel=“CN111“
        scheme="http://standards.iso.org/iso/17442">DUMMY_LEI
  </xbrli:identifier></xbrli:entity>
  <xbrli:period><xbrli:instant>2018-03-31</xbrli:instant></xbrli:period>
  <xbrli:scenario>
    <xbrldi:explicitMember dimension="eba_dim:BAS">eba_BA:x17</xbrldi:explicitMember>
    <xbrldi:explicitMember dimension="eba_dim:MCY">eba_MC:x465</xbrldi:explicitMember>
  </xbrli:scenario>
</xbrli:context>
<eba_met:mi290 unitRef="uGBP" decimals="-3" contextRef="c1317">8897000</eba_met:mi290>
```

ENTITY INVARIANT?

In Europe, the CEN ws XBRL (Heinze, 2013) has agreed, as the Filing Rule 2.9 Harmonisation topics — Part 4: European Filing Rules:

Rule 2.9 — One reporter

In general, an instance will be reported for only one reporter. Even if the content of the instance deals with a group of companies, there is only one entity reporting the instance to the regulator. The DTS author can determine the number of reporters in an instance.

The same Rule 2.9 has been cloned, with the same number, by the EBA filing rules (Jones, 2016) and by the EIOPA filing rules (Skopowski, 2015). This rule has been even simplified by the ESMA Filing Manual (ESMA, 2017) as "*Rule 1.2.3. All xbrli:identifier elements in an instance must have identical content*"

ONCE IN THE INSTANCE DOCUMENT

```
<link:schemaRef xlink:type="simple"
xlink:href="http://www.eba.europa.eu/eu/fr/xbrl/crr/fws/ae/cir-680-2014/2017-
04-04/mod/ae_ind.xsd" />
<link:schemaRef xlink:type="simple"
xlink:href="http://www.eba.europa.eu/eu/fr/xbrl/crr/fws/ae/cir-680-2014/2017-
04-04/mod/ae_con.xsd" />
```

or…

```
<eba_typ:CN contextRef="c1">111</eba_typ:CN>
```

or….

```
 <find:fIndicators>
   <find:filingIndicator contextRef="c1">CN111</find:filingIndicator>
   <find:filingIndicator contextRef="c1">A_00.01</find:filingIndicator>
 </find:fIndicators>
```

LESSONS LEARNT

An **invariant element provides information once only**. Repeating the same invariant element is simply redundant in storage (uses more space) and processing (checking that the invariant element is actually invariant in the file).

Filing Rules about the invariability of xbrli:identifier inside an XBRL Instance Document **converts the repetition** of Entity Name and Entity Schema in all and each one of the contexts of an XBRL Instance Document **in redundant and (for EBA & EIOPA) verbose.**

Following the same logic, **an invariant element**, applicable to all the Data Points in a DPM, **should not be defined at Data Point level**, as it adds no information at all. Therefore, the Dimension Entity must not be used. **Only in the instantiation of a DPM** for a particular Entity, **the identification of the Entity has sense**.

Advisable approach: include Consolidation Level only once per XBRL Instance Document.

CONCLUSIONS

The general conclusions are

1. creating a consolidated Financial Statement requires in general **human intervention**
2. **the structure** of a consolidated **Financial Statements** can be **basically reused** from its non-consolidated Financial Statements
3. the consolidation level is **invariant across the entire instance document**.

In a practical approach, for European Regulatory Financial Frameworks, the conclusions are

4. the **Entity identification should not be part of Data Points** and
5. (5) the definition of **Entity as hard coded Dimension creates redundancy and verbosity** in XBRL, in opinion of the authors.