

12. Special or Specific Modelling Considerations

This section summarizes special and specific considerations when modelling an SEC XBRL financial filing. The key piece of information this section provides are subtleties which are often overlooked when working with specific types of structures of a financial report.

12.1. Notion of [Line Items] key concepts

Within a [Table]'s set of [Line Items], certain concepts are required or the set of [Line Items]s provided will simply make no sense. For example consider the following disclosure of nonmonetary transactions:

22	Nonmonetary Transaction [Line Items]	[Line Items]		
23	Details of Nonmonetary Transactions [Table Text Block]	[Concept] Text Block (HTML)	For Period	
24	Nonmonetary Transaction [Hierarchy]	[Abstract]		
25	Nonmonetary Transaction, Basis of Accounting for Assets Transferred	[Concept] Text/String	For Period	
26	Nonmonetary Transaction, Name of Counterparty	[Concept] Text/String	For Period	
27	Nonmonetary Transaction, Gain (Loss) Recognized on Transfer	[Concept] Monetary	For Period	Credit
28	Nonmonetary Transaction, Amount of Barter Transaction	[Concept] Monetary	For Period	Credit
29	Nonmonetary Transaction, Fair Value Not Determinable	[Concept] Text/String	For Period	
30	Nonmonetary Transaction, Gross Operating Revenue Recognized	[Concept] Monetary	For Period	Credit

The concept on line 28, the amount of the transaction, is clearly required as that is what is being disclosed. All other information provides additional descriptive information about that amount. This descriptive information may, or may not, be required to be disclosed depending on the financial reporting rules. Filers can add additional descriptive information. But in all cases the amount will exist because the fundamental information being communicated makes no sense without it.

These "required concepts" are not clearly indicated within the US GAAP taxonomy, however they are VERY clearly documented within US GAAP. A financial reporting disclosure checklist is used by accountants to make sure they don't leave anything out. Many of these relations (if you have this, then you have to disclose this; if you disclose this then you likewise need to disclose this) used within a financial reporting disclosure checklist can be checked using software.

12.2. Deciding between isomorphic and polymorphic tables

There are three different ways [Table]s can be articulated in a taxonomy:

- Unique tables (i.e. all tables isomorphic or each table has a unique meaning)
- Only one table for everything (i.e. every [Table] has the same name)
- Mixture (i.e. some tables are unique, some are used to mean the same thing, for example how "Statement [Table]" is used in the US GAAP Taxonomy; polymorphic tables)

Isomorphic tables have some advantages, polymorphic tables have no advantage what-so-ever. For more information, see this analysis:

<http://www.xbrlsite.com/Examples/Dimensions/>



12.3. Modeling classes with only one member

This example focuses on one specific point. As you can see in the screenshot below of information about classes of preferred stock and common stock; the common stock has two classes whereas the preferred stock has only one:

Classes of Preferred Stock

Class	Par Value	Share Subscriptions	Shares Authorized	Shares Issued	Shares Outstanding	Amount 2010	Amount 2009
company:ClassAPreferredStockMember	1	20000	20000	20000	6000	2,000	1,000
Total all Classes					6000	2,000	1,000

Classes of Common Stock

Class	Par Value	Share Subscriptions	Shares Authorized	Shares Issued	Shares Outstanding	Amount 2010	Amount 2009
company:ClassACommonStockMember	1	10000	10000	10000	3000	500	500
company:ClassBCommonStockMember	1	10000	10000	10000	3000	500	500
Total all Classes					6000	1,000	1,000

How would or should having only one [Member] in a breakdown impact the modelling of information? The question should not really be about whether one specific company has one class of two or more classes of something; but rather modelling should be driven by the possibility of ever having either only one or one-to-many [Member]s of some class of information.

The point here is that an entity could have more than one class of preferred stock and a class of preferred stock can have a number of properties. Both the details of the class and the total of all classes, in the case shown above the total and the class are the same because there is only one member within the class; however, the total and the amount for each class are two different pieces of information.

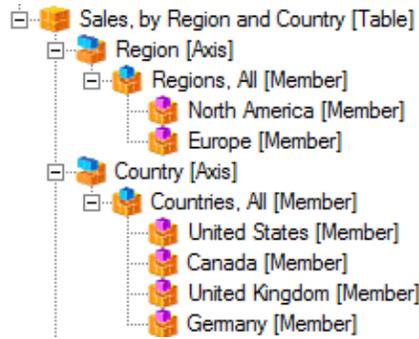
12.4. Modeling as nested domain members

Consider the example below which breaks down revenues by region and country:

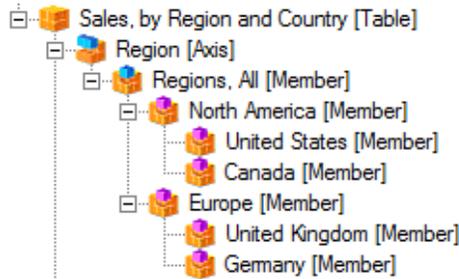
	2010	2009
NORTH AMERICA:		
United States	4,000	4,000
Canada	2,000	2,000
Total North America	6,000	6,000
EUROPE:		
United Kingdom	2,000	2,000
Germany	2,000	2,000
Total Europe	4,000	4,000
Total	10,000	10,000

There are two obvious options which might come to mind for modelling this information. The first option is to model a Region [Axis] and a Country [Axis]. That approach might look something like this:





Alternatively, one Region [Axis] with members for both the region and the country might be modelled. This approach might look as follows:



The question is, which is the more appropriate approach, one [Axis] with nested members or two [Axis]s?

Today, the best approach would be to avoid nested hierarchies of [Member]s as XBRL is silent on articulating how to aggregate such nested hierarchies of [Member]s.

If you find yourself repeating information within members your modelling is more than likely incorrect. For example, modelling “North America, United States” and then “North America, Canada” packs two meanings into one [Member] which should generally be avoided.

12.5. Choosing between modeling as concepts or member of axis

At times a choice needs to be made as to whether information should be modelled by modelling information as a concept and part of the set of [Line Items] or as a [Member] or an [Axis]. The *Roll Up*, *Class* and *Class Properties* business use cases help understand the dynamics at play and how they will impact your model.

In those business use cases the choices may not be so obvious. Let’s look at a more clear cut example. Consider this breakdown of revenues by geographic area.



Geographic Areas

Revenues by geographic areas were as follows for the years ended December 31 (thousands):

	2010	2009
NORTH AMERICA:		
United States	4,000	4,000
Canada	2,000	2,000
Total North America	6,000	6,000
EUROPE:		
United Kingdom	2,000	2,000
Germany	2,000	2,000
Total Europe	4,000	4,000
Total	10,000	10,000

This information could be modelled by creating 7 concepts such as:

- Revenues, North America
- Revenues, United States
- Revenues, Canada
- Revenues, Europe
- Revenues, United Kingdom
- Revenues, Germany
- Revenues

Looking at those concepts, you see that the concepts have two pieces of descriptive information: "revenues" which describes the type of concept and geographic type information.

This type of pattern tends to scream out for the use of an [Axis] for the geographic areas which could be used to characterize the one concept "Revenues".

Other factors which should be considered when trying to determine the best approach to model this information is:

- How the information aggregates to other information in your model.
- How the information ties to other information within your model.
- Other modelling decisions which you have already made which push you toward one specific option or another.

12.6. Understanding XBRL calculation inconsistencies

Generally you do not want calculation inconsistencies (they are really called inconsistencies, not errors) in your SEC XBRL filing. Many SEC filers can avoid all calculation inconsistencies. Sometimes though you cannot. The technical reason for this is that certain facts reported with certain periods sometimes get included in calculations which they should not actually be included in. This is a known situation in XBRL and is unavoidable. This is not the same thing as calculations which should add up but don't.



Some people think that using dimensions causes calculation errors. This is not the case. Using dimensions or not using dimensions does not cause calculation errors. Using dimensions incorrectly can lead to calculation errors.

These are the following reasons that a calculation linkbase error (actually the more correct term is calculation inconsistencies) might show up:

1. Because there truly are calculation inconsistencies.
2. Because of a taxonomy modelling error such as erroneously mixing two dimensional models together.
3. Due to SEC constraints imposed upon XBRL instance creation.
4. Due to "stray facts" being used by an XBRL processor in computations of a network where there is no intension that the fact value should be used. (This is a known issue with XBRL and caused by the lack of constraints on typically the period context, but it could also be caused by the entity identifier context.)

If "1" is the case, then the calculation inconsistency should clearly be fixed and this would resolve any issue of calculation inconsistencies showing up.

An example of "2" is on the balance sheet, modelling all balance sheet line items as concepts and then switching to model the classes of stock as [Axis] of a concept, for example if a company has two classes of stock, Class A common and Class B common. The way to avoid calculation inconsistencies is to create a concept for Class A common and a concept for Class B common; then there would be no calculation inconsistency. But see the discussion on point "3".

The SEC states that if information is not shown on the HTML financial statement then it should not be present in the XBRL instance. Using the classes of stock example where a company has two classes of stock, from a data modelling perspective, the class of stock breakdown would be something like:

Class A Common	100
Class B Common	200
Total Common	300

The value "300" is never really reported on a financial statement. However, from a data modelling perspective it is the true link between two [Table]s, the "Balance Sheet [Table]" and the "Classes of Common Stock [Table]". Class of stock information other than the value of each class of stock is shown such as par value, shares authorized, shares issued, shares outstanding, etc. That information does not fit into a balance sheet model, it fits into the class of stock model. If one thinks of all this from a "presentation" perspective, one reaches different conclusions as to how the information should be modelled. From a data modelling perspective, the conclusions reached would be different. If the information is modelled correctly from a data modelling perspective, it is a trivial task for a computer application to take the information needed from the Class of Stock [Table] and render it correctly on the Balance Sheet [Table]. However, if the information is modelled from a presentation perspective, the connection between the balance sheet and the class of stock information does not exist.

The bottom line for points "2" and "3" are that how people think about the information in an XBRL instance, from a presentation perspective or from a data



modelling perspective will highly likely mature when users realize that modelling information from a data modelling perspective really does not hurt their ability to present the information how they desire to present it; but modelling information from a presentation perspective hurts the ability to analyze the information.

There is a known issue with XBRL which point "4" shows. Say a company shows a balance sheet with two periods, December 31, 2010 and 2009. There are concepts relating to each balance sheet for those periods and the calculations for both of those periods work correctly. But, in another area of the financial statement, "Cash and cash equivalents", "Receivables", and "Current Assets" is disclosed for 2008. What an XBRL processor will try to do is put the concepts together and try and create a balance sheet and validate that balance sheet for the period 2008, but the calculations will not be consistent because there is no "Inventory" or "Prepaid expenses" disclosed which would be needed to actually confirm that the "Current Assets" value is correct. This is a known problem which occurs in XBRL which is due to the lack of a way to constrain the period (and also the entity identifier) from a network of concepts (i.e. an extended link of a specific role), and therefore calculation inconsistencies may occur which you cannot remove from your XBRL instance.

12.7. Restricting XBRL data types

XBRL can use XML Schema Part 2, Data types (see the specification at <http://www.w3.org/TR/xmlschema-2/>) to restrict what creators of financial reports can use as fact values. This can be quite useful in maintaining data quality.

For example, here are some types of restrictions which could be used:

- Setting a specific length, a minimum length, or a maximum length of a fact value, such as limiting the value to 10 characters
- Providing an enumerated lists of specific values which can be provided, such as the enumerated list: red, blue, green, orange.
- Providing a specific pattern for example the pattern of a phone number (XXX-XXX-XXXX) or of a social security number (XXX-XX-XXXX).

Going into details is beyond the scope of this document. However, we did want to mention this powerful features availability should you feel you need it.

