Modelling Financial Information Using XBRL

A guide for accountants trying to use XBRL effectively and efficiently. Special emphasis on financial reporting business use cases. Useful information which enables communication between business users trying to make use of XBRL and software engineers and architects trying to make XBRL easier for those business professionals.

By Charles Hoffman, CPA

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

Preface

This material is intended for business users who need to work with XBRL today and help other business users figure out how to make use of XBRL. This material is not intended to explain XBRL to the average business user. Once the correct software exists, the explanation required for the average business user will be both different and significantly easier than this explanation. This material is more along the lines of "train the trainer", for those on the bleeding edge of using XBRL.

We are where we are in the evolution of XBRL. Hopefully this material will enable the next stage of the evolution of XBRL to occur. I have attempted to articulate all issues one must understand in order to make decisions on how to best architect systems which make use of XBRL. Understanding the issues and options can help someone who desires to or must use XBRL make good, informed decisions.

It is hoped that this material is helpful within the accounting community to help the community understand what XBRL brings to the table and what new issues need to be addressed. The information in this document provides fodder for meaningful discussion and debate as to how to best utilize this new tool.

Business professionals from any business domain can use this information to help them understand the issues relating to implementing XBRL within their business domain. This material helps business users understand what to ask for from information technology professionals when working with XBRL by enabling the appropriate discussions to take place. While much of this information appears to be financial reporting related, the reality is that what the financial reporting community has learned about using XBRL can be effectively applied to other business domains.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

Table of Contents

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

1. Introduction

Businesses exchange information. They do so internally within their organization and they do so externally beyond their organization with members of their information supply chain.

There are advantages to exchanging this information, where appropriate, with automation. This automation brings business benefits such as reduced costs, increased functionality/quality, and more timely information.

Standards are the key to effective automation. Rather than building countless point solutions which solve one problem at a time, standards allow for many-to-many solutions to the information exchange via automation problem. Standards enable cost effective and efficient automation, business system to business system interoperability.

There are three aspects to business system interoperability (per this HL7 video, see http://www.hl7.org/documentcenter/public/training/IntroToHL7/player.html):

- **Technical interoperability**: Physically moving information from business system "A" to business system "B".
- **Semantic interoperability**: Insuring that business system "A" and business system "B" understand the information in the same way.
- **Workflow interoperability**: Enabling business processes at the organization housing business system "A" to effectively work with business processes at the organization housing business system "B".

There are many industries or domains attempting to solve the business system to business system interoperability issues. This is being done in many different ways with different levels of success.

Consider the music industry, the MP3, iTunes, the iPod and how stores and CDs have almost disappeared from the face of the planet. This is only after the vinyl record was replaced by the CD. Things change.

In the digital age of the Internet and the Web, the unstructured information of a physical paper document and the unstructured information of a digital representation of that information in a PDF or HTML or ever Word document don't fit in many cases. Paper, PDF, HTML, and Word all still have their utility, but something else is needed.

Here I try and show a way to effectively model business information, and in particular financial information, using XBRL (eXtensible Business Reporting Language). This approach addresses technical, semantic, and workflow interoperability issues.

1.1. Executive Overview

From what I can tell, the US began down the path of effectively exchanging financial information in 1929 after the stock market crash when what became generally accepted accounting principles (GAAP) were created. A standard way of reporting, rather than every company reporting whatever it wanted to, improved communication.

In the 1970s when the world began creating what became IFRS (International Financial Reporting Standards) another big leap was taken, trying to replace the some 80 different sets of GAAP used by different countries with one standard GAAP.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

In 1998, another step was taken when the Extensible Business Reporting Language (XBRL) was created. XBRL is a technical syntax. XBRL is a general purpose technical specification used to physically articulate and otherwise describe information that is to be exchanged and physically represent it in a form, or syntax, to actually move the information.

The financial reporting domain is only one domain to solve the business information exchange problem for the domain. Another is the healthcare industry and HL7 (Health Level 7, see http://www.hl7.org).

More than just a technical syntax is necessary for effective exchange of business information such as financial information. This is particularly true for XBRL when its extension capabilities are utilized.

These appear to be the moving pieces for financial reporting that I have come up with thus far and explain in this document. This examples what the pieces are and how the pieces relate with other pieces.

[CSH: This needs work.]

- **Business Reporting Logical Model**: A common model with unambiguous, explicit semantics for business reporting must exist. The Business Reporting Logical Model is such a model.
- **Financial Reporting Logical Model**: A common model with unambiguous, explicit semantics for financial reporting must exist. The Financial Reporting Logical Model is such a model. It builds on the Business Reporting Logical Model.
- **Multidimensional Model**: There are a number of approaches to implementing business reporting. The relational model is one. The multidimensional model is another. Business Intelligence and OLAP (Online analytical processing) leverage the multidimensional model, as does this implementation of XBRL.
- **Meta Patterns**: Patterns can be leveraged to make technologies easier for business users to make use of. Meta patterns are patterns in the information models of business and financial information.
- **Business Use Cases**: Business use cases point out the common and not so common occurrences of cases in business reporting which XBRL must satisfy. The business use cases here are gathered from 10 years of working with IFRS and US GAAP financial reporting, expressing those financial reporting standards as XBRL taxonomies and reports as XBRL instances. The meta patterns can be derived from comparing these business use cases, seeking the patterns. They are both examples and test cases.
- **Basic Example, Comprehensive Example, Comparison Example Test Cases**: The Basic Example, Comprehensive Example and Comparison Example contribute to helping to figure out the business reporting logical model, financial reporting logical model, and the meta patterns from one perspective. From the opposite perspective they prove that everything works correctly and as anticipated. They are both test cases and examples.

[CSH: Workflow is not addressed as much as is probably needed. Also, the protocols needed within the workflow are not addressed at all.]

There are two levels to think about modelling XBRL. The first is if you want to leverage XBRL for a proprietary, internal or closed implementation. Nothing

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

further needs to be achieved to leverage the techniques and approaches articulated here.

The second is the level of a global standard for business information exchange. For this to work correctly one of two things still need to occur: (a) some global standard needs to be agreed to, or (b) a de facto standard becomes the global standard, much like PDF because a de facto global standard. XBRL could become a global standard for financial reporting without becoming a global standard for business reporting. XBRL already provides leverage for closed, and therefore proprietary, business information exchange systems such as those implemented by regulators.

1.2. Terminology

The following is important terminology.

Term	Meaning
Network	XBRL extended link(s) with a specific role. A Network or Network of relationships is two or more concepts which are organized within one or more XLink Extended Links which are of the same type (presentation, calculation, definition) and have the same extended link role. How XBRL uses extended links and how XLink uses extended links are different and this difference needs to be well understood.
Semantics	
Syntax	
Workflow	
Protocol	

1.3. Important Key Ideas

Trying to understand this information without understanding certain ideas would be like trying to understand calculus without understanding algebra, mathematics, or how to count. The following is a summary of the important key ideas which need to be understood in order to understand this material.

- **Difference between syntax and semantics**:
- **Difference between unstructured and structured information**:
- **Difference between structured for presentation and structured for meaning**:
- **Difference between a point solution and a global standard many-to-many solution**:

You can get the basic understanding of the ideas above from this video, *How XBRL Works*:

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

http://www.youtube.com/watch?v=nATJBPOiTxM

1.4. Files and Additional Information

There are a number of Web pages which are supplemental to the information in this document. This information is generally referred to in the sections of this document. A summary of all this information can be found here:

http://www.xbrlsite.com/Patterns/2010-08-01

1.5. Acknowledgements

There has been a lot of learning about how to best make XBRL work since its inception in 1998. There is not necessarily general consensus as to how to best build an XBRL taxonomy or XBRL instances at this juncture in XBRL's evolution. However, there are many examples of XBRL. Some of these examples work well, others work with less effectiveness, all have side effects which one might not fully realize exist or fully grasp. All the issues relating to XBRL will expose themselves as XBRL evolves and is put into to use solving more and more business information exchange problems.

This document takes information which I have gleaned from the many XBRL taxonomies I have worked to create over the years, the knowledge which I have gained from many different sources, vets the information as best as I can and summarized it into what I consider best practices. XBRL taxonomy creation projects such as IFRS and US GAAP for financial reporting, COREP for solvency and liquidity reporting by financial institutions, FINREP for financial reporting for financial institutions, FDIC, CRAS, and other funny sounding names have all contributed to this process. During this 10 year journey of trying to tame the XBRL beast, solve the XBRL puzzle; I have learned a lot from a lot of different people each with different, unique skills which they brought to the table in different ways.

While I did physically create these XBRL taxonomies, XBRL instances, and the related documentation; I could have not done so without the gracious help of a number of people, directly and indirectly, over the years. I see myself as merely a custodian of this important information, nurturing it along for the benefit of all, condensing countless discussions into something hopefully useful for the common good.

I would like to specifically thank these contributors: Walter Hamscher, Geoff Shuetrim, David vun Kannon, Rene van Egmond, Thomas Egan, Josef Macdonald, Jim Richards, Roger Debreceny, Jeff Naumann, David Prather, Alan Teixeira, Hugh Wallis, Allyson Ugarte, Colm O hAonghusa, Giancarlo Pellizzari, Yossef Newman, Rob Blake, Mark Creemers, Marc van Hilvoorde, Herman Fischer, Ignacio Hernandez-Ros, Cliff Binstock, David Scott Stokes, Masatomo Goto, Paul Warren, Mark Goodhand, Campbell Pryde, Michele Romanelli, Maciej Piechocki, Victor Morilla.

There are others which I probably left off and for this I apologize. I acknowledge and appreciate the thinking others contributed to this endeavor.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

2. Understanding the Business Reporting Logical Model

If you have ever used Microsoft Excel then you have experienced the benefits which are derived from a good logical model. When you work with an Excel electronic spreadsheet, you interface with familiar things like workbooks, worksheets, columns, rows, and cells.

Business reporting has similar logical model. This business reporting logical model can be leveraged to make working with XBRL significantly easier for business users.

XBRL is a technical syntax with such things as extended links, linkbases, URIs, and other technical mumbo jumbo which has little meaning to business users. This technical mumbo jumbo can be hidden behind a good business reporting logical model so business users, without the assistance of information technology departments, can utilize the very useful features which the XBRL technology provides.

A logical model provides ease of use but it also provides other benefits. A logical model protects your investment and protects you from differences in how others implement a technology. Technology changes as new and better technologies replace older versions of technologies. But the fundamental, logical pieces of business reporting rarely change over the years. When you interact with XBRL at the syntax level, you expose yourself to the whims of external parties such as regulators who implement the technology differently.

For example, both the FDIC and SEC implement XBRL yet the implementations are different. If you are a financial institution and you must report to both the FDIC and the SEC and how they implemented XBRL differently, how do you implement XBRL internally?

2.1. Straw Man Implementation of Business Reporting Logical Model

The XBRL International Taxonomy Architecture Working Group has made available a DRAFT Business Reporting Logical Model. It has been seeking input from software vendors to determine what that model should look like. One primary purpose driving the creation of that model were architectural differences between the US GAAP XBRL taxonomy, the IFRS XBRL taxonomy and the EDINET XBRL taxonomy. A project to reconcile the differences between these taxonomies was created called the Interoperable Taxonomy Architecture (ITA). Participants in this project were the US SEC, the Japan FSA, the European Commission and the IASC Foundation. You can find more information about that project here:

http://tinyurl.com/nfszww

A straw man implementation of the DRAFT Business Reporting Logical Model was created. From that straw man implementation, a number of test cases were created to see if Business Reporting Logical Model worked. For information on those test cases, see:

http://www.xbrlsite.com/Patterns/2010-08-01

While this implementation of the Business Reporting Logical Model is a draft, it provides a good framework for meaningful discussion and debate on the value of

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

a publically available Business Reporting Logical Model and what that model should look like.

The existence of a publicly available global standard Business Reporting Logical Model does not limit the utility of such a model. XBRL itself has a logical model. That logical model is not documented very well. The US GAAP Taxonomy has a logical model. Likewise, that model is not well documented.

The important points to realize here are the following:

- Computers do better with logical, consistent things then they do with illogical, inconsistent things.
- XBRL is logical and consistent, but it is a technical syntax which is difficult for business users to make use of. Different business users can use the XBRL syntax in different ways creating different architectures which can be challenging to get to work together.
- A business reporting logical model can make this things easier. A logical model helps XBRL taxonomies to be created consistently across different taxonomies, be consistent within itself, and make XBRL easier to use for business users.
- The straw man implementation of the Business Reporting Logical Model is one implementation. It is a DRAFT. It is useful in implementing your logical model.
- One global standard logical model would be better, but it does not exist at this time.
- Reconciling your internally implemented logical model to a global standard logical model, should that model ever be created by XBRL International, should be easy particularly if you provide input to XBRL International.
- There are significant benefits from implementing some business reporting logical model today.
- The US GAAP taxonomy and SEC XBRL filings would benefit from implementing a consistent business reporting logical model, it does not necessarily have to be this model.

2.2. High Level Overview of Business Reporting Logical Model

Here we provide you with a high level overview of the business reporting logical model. Getting into too many details would actually be counterproductive in that it would take away from seeing the big picture.

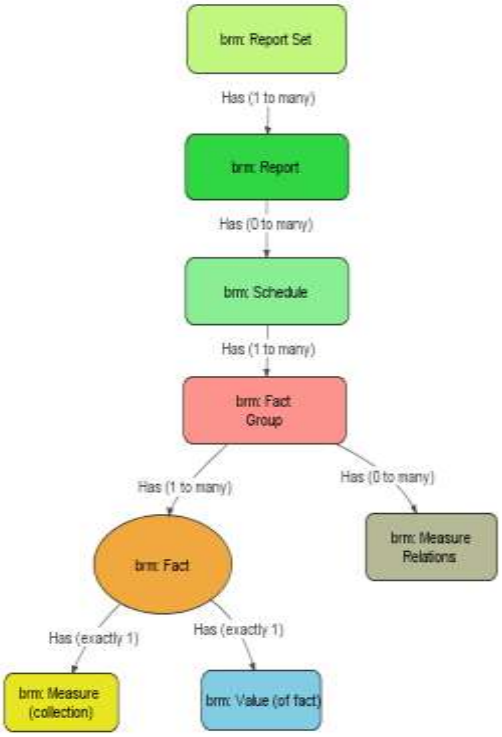
The business reporting logical model itself has a technical implementation. In fact, it could have many technical implementations. The model is described using UML and RDF/OWL which are standard tools for building such models. Technical people understand how to read UML or RDF/OWL in order to implement the technical aspects of the business reporting logical model.

Another way to articulate a model is to use a mind map. While a mind map does not contain the technical information needed to create the technical implementation of that model, it can be easier to read. The following is a PDF rendering of a mind map of the business reporting logical model:

http://www.xbrlsite.com/Demos/FRTA/2010-06-15/_LogicalModels.pdf

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

The figure below shows a graphical representation of a high level view of the business reporting logical model. The table describes the components of that model.



Term	Meaning
Report Set	A *Report Set* is a set of business reports. For example, if you are comparing your company to other companies in your industry the *Report Set* would be the set of all reports that you are working with. A *Report Set* may contain from one to any number of Reports.
Report	A *Report* is one business report.
Schedule	A *Schedule* is a container which allows you to organize *Fact Groups*.
Fact Group	A *Fact Group* is a set of *Facts* which go together and are generally used for some specific purpose. A *Fact Group* has the same collection of *Measures*. For example, a balance sheet is a *Fact Group*.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

Term	Meaning
Fact	A *Fact* is information which gets reported. *Facts* can exist on their own, but are best used with other *Facts* within a *Fact Group*. For example, Cash and Cash Equivalents can be understood on its own but is typically used within a balance sheet, cash flow statement, or disclosures of a financial report.
Value	A *Value* is the physical value of a *Fact*. For example, '1000' or 'FIFO' are *Values*. *Values* can be numeric or non-numeric.
Measures	*Measures* is the collection of characteristics which describe a *Fact*. One *Measure* is one and individual characteristic. For example, Cash and Cash Equivalents as of December 31, 2010, for ABC Company, which is audited and the actual value (as opposed to the budgeted value) is a collection of *Measures*. Each characteristic or *Measure* is part of the characteristics which describe the Fact.
Member Relations [CSH: This was called Member Relations, but it is really relations between the Members.]	The *Member Relations* is the set of relations between the *Facts* in a *Fact Group*. Patterns within the *Member Relations* can make up an *Information Model* which are commonly occurring patterns found within business information. For example, a "Roll Up" (a set of numbers which adds up like the balance sheet) and a "Roll Forward" (a reconciliation between two numbers at different points in time like the cash flow statement) are common *Information Models*.

DRAFT

2.3. Other Important Aspects

The following are other important terms and aspects of the Business Reporting Logical Model worth mentioning here. This document cannot go into all the details of the entire Business Reporting Logical Model which technical implementers need. Business users will not need this detail is the details will be hidden within the technical implementation.

All this said, these are other important terms worth mentioning.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

Term	Meaning
Flow	A *Report* has a *Flow*. *Flow* is the notion of ordering or sequencing of the components of a business report. For example, a financial statement has a balance sheet, an income statement, cash flow statement, statement of change in equity, accounting policies and disclosures. These components are represented by *Fact Groups*. *Flow* organizes these *Fact Groups* into a sequence desired by the creator or consumer of the business report. The creator and consumer could have different organizations.
Business Rules	A *Report* has *Business Rules*. *Business Rules* express relationships between *Facts* in a *Report*. There are two broad categories of *Business Rules*. One category are computations or numerical relations. The second category are report-ability rules such as "if the balance sheet has XYZ as a line item, then the XYZ policy needs to exist and the XYZ disclosures need to exist within the *Report*.
Reporting Entity [Measure]	The *Reporting Entity [Measure]* is a *Measure* defined by the Business Reporting Logical Model. It is defined at the level of the Business Reporting Logical Model because XBRL requires an entity identifier for every XBRL fact which is reported. This is a special class of Measure in that it must meet the requirements of an XBRL instance context entity identifier.
Calendar Time [Measure]	The *Calendar Time [Measure]* is a *Measure* defined by the Business Reporting Logical Model. It is defined at the level of the Business Reporting Logical Model because XBRL requires a period for every XBRL fact which is reported. This is a special class of Measure in that it must meet the requirements of an XBRL instance context period.
Concept [Measure]	The *Concept [Measure]* is a *Measure* defined by the Business Reporting Logical Model. The Concept [Measure] is the collection of Facts being reported. This is a special class of Measure in that it must meet the requirements of an XBRL element which is a concept.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

Term	Meaning
Fact Value Attribute	A *Fact Value Attribute* is the notion that a *Value* may have zero to many pieces of information which are somehow associated with the Fact, but the information should not be part of or impacted by the multidimensional processing (i.e. it should not be a Measure). There are three categories of Fact Value Attributes defined by the Business Reporting Logical Model. • *General Comment* which is a general comment about the Fact. • *Reason Not Reported* articulates the reason why a Fact is reported with a nil value. • *Reclassified* articulates why a Fact has been change between two different reports.
Amount	The *Amount* is the value of a numeric Fact.
Rounding	The *Rounding* relates only to numeric Facts and is used to articulate information expressed by the XBRL decimals attribute.
Unit	The Unit exists only on a numeric Fact. For example, the Unit could be US Dollars, EUROS, shares.
Textual	The Value of a non-numeric Fact. Could be text, narrative, prose, escaped XHTML, other textual information which could be converted into an image (base 64), or other legal XBRL type.
Domain	A *Domain* indicates the total or complete set for a *Measure*. For example, "All Geographic Areas" or "All Business Segments" or "All Subsequent Events". Some *Measures* may not ever report the *Domain*. It is important to understand that some *Measures* do not have a *Domain* for technical reasons relating to XBRL. For example, the *Reporting Entity [Measure]*, the *Calendar Time [Measure]*, and any *Measure* implemented as at typed member do not have a *Domain*. A *Domain* is considered a class of *Member*.
Member	A *Member* is a possible value for a *Measure*. A *Domain* is a special class of possible value. For example, "North America", "South America", "Europe", "Africa", "Asia" are examples of *Members* of the Geographic Area [Measure]. "All Geographic Areas" is a *Domain* for that same *Measure*.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

Term	Meaning
Hierarchy	A *Hierarchy* is an *Information Model* where there are relations between Facts but the relations do not involve computations. For example, accounting policies.
Roll Up	A *Roll Up* contains relations where there is a simple computation between Members of the *Concepts [Measure]*. A Roll Up relation is basically A = B + C + *n*.
Roll Forward	A *Roll Forward* contains a relation where a BASE (beginning + additions – subtractions = ending) type of relation exists. Basically, a *Roll Forward* is a reconciliation between two instants in *Calendar Time [Measure]*. An example of a *Roll Forward* is the cash flow statement or a movement analysis for property, plant and equipment.
Adjustment	An *Adjustment* is similar to a *Roll Forward* in that it is a reconciliation; however the Measure which is moving in the relation is the *Report Date [Measure]*. An example of an *Adjustment* is the reconciliation of an originally stated balance to a restated balance for an accounting prior period adjustment.
Variance	A *Variance* is a computation between two different *Reporting Scenarios [Measure]*s. For example, the difference between the actual and budgeted *Fact Values* for Sales. [CSH: I am seeing clues which tell me that this may not be an Information Model.]
Other Relation	An *Other Relations* is what amounts to a *Hierarchy* with *Business Rules* attached to the *Facts* within the *Hierarchy*. An example would be the computation of weighted average common shares and earnings per share.

[CSH: With regard to the Information Model, there are two important points to understand. First, it is hard to dispute the existence of the stated Information Models. The US GAAP taxonomy alone is evidence that these information model patterns exist. Second, it may be the case that there are additional information models which could be added. When they are discovered, no problem; add them to the list. The key notion to grasp here is that there are not an infinite number of these information models, nor are the information models random. As such, the fact that there are patterns can be leveraged.]

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

3. Understanding the Financial Reporting Logical Model

The Financial Reporting Logical Model is a set of Measures which are used for financial reporting. The Financial Reporting Logical Model utilizes the Business Reporting Logical Model, adding to it Measures specifically for financial reporting. Please refer to the previous section relating to the Business Reporting Logical Model.

The Measures added by the Financial Reporting Logical Model allow for comparability across taxonomies which make use of these measures. For example, a GAAP taxonomy does not need to define "Legal Entity [Measure]", it can rather simply use the Measure defined by the Financial Reporting Logical Model.

The Financial Reporting Logical Model will likely be used by GAAP taxonomies and company extension taxonomies.

The following are the Measures added by the Financial Reporting Logical Model.

DRAFT

Measure	Meaning
Report Date [Measure]	Date of a financial report, usually the date of the audit report.
Fiscal Period [Measure]	Fiscal period of a *Fact*. Note that the fiscal period is always a duration of time. The fiscal period may be the same as the Calendar Time [Measure], but it may not be the same.
Legal Entity [Measure]	The legal entity to which a *Fact* relates. Legal breakdown of an entity.
Business Segment [Measure]	The business segment of the reporting entity to which a *Fact* relates. Management or business operations breakdown of an entity. This tends to be the business perspective of an entity as seen by management.
Operating Breakdown [Measure]	Breakdown of an entity by continuing and discontinued operations as defined by accounting rules.
Geographic Area [Measure]	The breakdown of an entity by geographic area as defined by accounting rules.
Measurement Basis [Measure]	The measurement basis for a *Fact*. For example, historical cost, amortized cost, fair value, etc.
Reporting Scenario [Measure]	The reporting scenario under which a Fact is reported. For example, actual, budgeted, forecast, etc.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

Measure	Meaning
Third Party Verification [Measure]	The level of third party verification provided for a Fact. For example, audited, reviewed, compiled, etc.
Other properties of Measure	Other Measures which could be added by a GAAP taxonomy or company extension taxonomy.

[CSH: The list of Measures above is the best list that I have seen. I have some questions about these. First, Restatement [Measure] was removed from this list because it is really not a measure, restatements can be handled using the Report Date [Measure]. The measures seem to fall into two categories. The first category clearly relate to the dimensional aspect of the information. What I mean is that it is clearly a dimension, such as Business Segment [Measure]. The other category does NOT appear to be dimensional really. For example, Third Party Verification [Measure]. This appears to be more of an attribute than a dimension. The same with Measurement Basis [Measure]. Perhaps business intelligence modelers have some insight into this. If this list is not correct, then the items which are not correct can be removed and items not on the list can be added. The point here is more that (a) financial information has dimensions and (b) if you want to do comparisons across taxonomies, the more consistent the meta data between the taxonomies the easier this is.]

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

4. Understanding the Multidimensional Model

The multidimensional model is a model used to represent information. Another model for representing information is the relational model. There are other models. Each models has its strengths and weaknesses, it pros and cons.

Transaction processing systems tend to use the relational model.

Online analytical processing (OLAP) such as business intelligence applications tend to use the multidimensional model. OLAP systems and the multidimensional model are different things.

4.1. Strength of the Multidimensional Model

The greatest strength of the multidimensional model is the flexibility it provides to slice and dice and otherwise reformat information to fit the preference of the consumer of the information.

OLAP and the multidimensional model are two different things.

4.2. Limitations of Business Intelligence Systems

There are two important limitations which business intelligence systems have that get in the way of using them with XBRL. The first is that BI applications tend to focus more on numbers, rather than text and numbers. The second is that BI system tend to employ OLAP for aggregating information.

If you ever tried to use an Excel pivot table which is basically a simple BI-type tool, you can see how a pivot table cannot quite do what you want to do in terms of rendering business reporting information which has been expressed in XBRL.

Also, typical BI tools do not import meta data which explains the information. This is because XBRL taxonomies contain meta data which explains the XBRL instance. A BI tool needs to be able to import both the XBRL instance (numbers and text) and all of its XBRL taxonomies. BI systems should allow you to aggregate information but not force you to do so.

Another limitation of business intelligence systems is that there is no standard for exchanging information from one BI system to another BI system.

BI systems are quite useful, but they need to go to the next level. Currently, BI systems seem to be focused on internal analytics within an organization or many times within a department of an organization which cannot work with the internal analytics of systems within the same organization. BI needs to be more externally oriented, brining in information from whatever source, from whatever entity, internal or external.

4.3. Important terminology you need to understand

The multidimensional model has lingo that explains its pieces and how those pieces interact. Unfortunately, there is not one standard, precise set of terms that everyone agrees on, but most models are fairly close. Symmetry Corp, a business intelligence consulting firm, has created a common model that it uses to reconcile all the different multidimensional model terminology used by the major software vendors. You can see this reconciliation here:

http://www.symcorp.com/downloads/ADAPT_white_paper.pdf

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

Another explanation of the multidimensional model is the Multi Dimensional eXpressions (MDX) language, developed by Microsoft and embraced by many OLAP vendors as a de facto standard. Get more information on MDX here:

http://www.xmla.org/mdx.htm

XBRL Dimensions terminology is another variation of the explanation of the multidimensional model. Here's a table of important common multidimensional terminology reconciled to XBRL Dimensions terminology:

Common Term, [US GAAP Term]	***XBRL Dimensions Term***	***Business Reporting Logical Model Terminology***	***Brief Description***
Scalar			Data that has no dimensions. For example, the value for pi (3.14) has no dimensions.
Cube, data cube, hypercube, pivot table, [Table], table, matrix	Hypercube	Fact Group	A table or matrix is basically a two-dimensional hypercube (columns and rows). Cubes are information sets that generally have three dimensions. Hypercubes can have any number of dimensions and are therefore harder to express visually. All cubes are also hypercubes. For example, an analysis of sales by product and by region might be a hypercube.
Dimension, axis, [Axis]	Dimension	Measure	A characteristic of the information. For example, "Geographic Area" may be a characteristic of the information and therefore a dimension.
Domain, hierarchy, level, [Domain]	Domain	Domain	A root or total of a dimension. For example, "All Geographic Areas" may be a domain of the "Geographic Area" dimension.
Member, [Member]	Member	Member	A possible values of a dimension. For example, "Asia", "Europe", "North America", "South America" might be members of the "Geographic Area" dimension.
Concept	Primary item	Members of the Concept [Measure]	Generally, in XBRL terms, the XBRL taxonomy concept dimension of information. For example the taxonomy concept "Sales" may be a primary item.
Shape			Hypercubes have a shape determined by its dimensions.
Slice		Slice	A portion of a hypercube, somewhat like a filter, which allows information with more than two dimensions to be presented on a two-dimensional surface.
[Extended link], [Group]	Network	Fact Group	Hypercubes exist within XBRL networks. A network may have one or more hypercubes within it. Networks are a way of physically separating sets of relations.
[Numbers in extended link definition]		Flow	Order or sequence of Fact Groups

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

This terminology can be challenging to sort out. Hopefully, XBRL can make BI and the multidimensional model easier for business people to grasp and use.

4.4. Implementing the Business Reporting Logical Model Using the Multidimensional Model

The straw man implementation of the Business Reporting Logical Model uses the multidimensional model.

This document provides a mapping between the Business Reporting Logical Model semantics and the implementation of those semantics within XBRL:

http://www.xbrlsite.com/Demos/FRTA/2010-06-15/_SemanticsToSyntaxMapOfImplemenation.pdf

This specific implementation leverages the multidimensional model and makes use of XBRL Dimensions within that implementation.

The following is a document which describes the processing model:

http://www.xbrlsite.com/Demos/FRTA/2010-06-15/_ProcessingModelOfImplementation.pdf

[CSH: I am not sure that this is really a processing model. More, it discusses important aspects which are helpful in understanding this implementation.]

For more information see:

http://xbrl.squarespace.com/journal/2010/6/13/straw-man-implementation-of-business-reporting-and-financial.html

There are other approaches to implementing XBRL.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

5. Understanding Meta Patterns

The world is full of patterns and information technology engineers and architects leverages these patterns when trying to get a computer to do something effectively and efficiently for humans. Understanding the patterns which exist can help make this easier.

Business reports including financial reports have patterns. Another way of saying this is that business reports are not random. There are not an infinite number of patterns in business reporting.

The Business Use Cases in a later section comprise many of the different components of business reports, use cases, which exist in financial reporting. There are approximately 30 use cases in that set. The set of 30 use cases was derived during and from creating the IFRS (International Financial Reporting Standards) XBRL taxonomy and the US GAAP XBRL taxonomy.

The 30 use cases were distilled down to their essence, a set of what I call meta patterns. These meta patterns are described in this section and are summarized here:

- **Hierarchy**: A hierarchy of concepts with no numeric relations.
- **Roll Up**: What is commonly referred to a "roll up", basically A + B = D, with all concepts being in the same context and there can be any number of concepts adding up to the total.
- **Roll Forward**: What is commonly referred to a "roll forward" or "movement analysis", beginning balance + changes = ending balance. A Roll Forward reconciles two instants between two *Calendar Time [Measure]*s.
- **Adjustment**: Similar to a roll forward in that it is a reconciliation, however rather than the *Calendar Time [Measure]* changing, it is the report date which changes: originally reported + adjustment = restated.
- **Variance**: Analysis between two *Reporting Scenarios [Measure]*, for example: actual – budget = variance.
- **Other Relations**: Some other numeric type computation relation which is too complex to articulate using XBRL calculations and is not one of the other meta patterns. For example, the computation of earnings per share or weighted average common shares is an Other Relations meta pattern.

[CSH: I am not 100% convinced that the Variance is a meta pattern. I am seeing signs that it might not be.]

Meta patterns allow for two things. First, they help define what I am calling the Information Model of a set of Concepts which make up a set of Member Relations (or Measure Relations). This allows for the consistent creation of both base XBRL taxonomies and extension XBRL taxonomies. Second, meta patterns allow XBRL syntax to be pushed into the background, business users deal with XBRL at a higher and easier to use level of abstraction.

Don't find a meta pattern that you believe exists in this list? No problem, just add it. By definition, everything will fit into that list. This is because anything can be defined as a Hierarchy. Unless it fits into one of the other meta patterns, then it is a Hierarchy.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

Information models have logical points where the information model can be extended. These are called extension points. By contrast, there are points in an information model which are illogical to extended the information model. For example, it is illogical for a Roll Up to have, say, two total concepts.

Extension points on an information model of a meta pattern provide clarity as to exactly where a extension taxonomy can extend a base taxonomy. An extension taxonomy must only extend a base taxonomy at logical extension points. As such, defining information models makes XBRL's extensibility work because it clearly defines where a base taxonomy may be extended.

You can obtain example XBRL instances and XBRL taxonomies and other information for each of these meta patterns here:

http://www.xbrlsite.com/Metapatterns/2010-08-01/Matrix.html

We now provide additional information about each of these meta patterns.

DRAFT

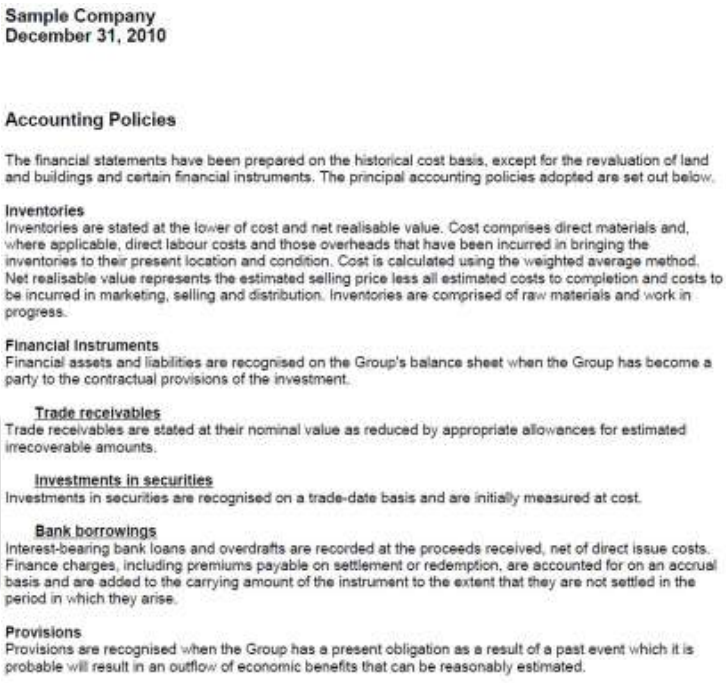
This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

5.1. Hierarchy Meta Pattern

The *Hierarchy* meta pattern models a hierarchy or a tree of information. A Hierarchy meta pattern has no computations (i.e. no XBRL calculations or XBRL Formulas relating to relations between numeric values, see *Other Relations* meta pattern for that).

http://www.xbrlsite.com/Metapatterns/2010-08-01/Matrix.html

5.1.1. Visual Example



Sample Company
December 31, 2010

Accounting Policies

The financial statements have been prepared on the historical cost basis, except for the revaluation of land and buildings and certain financial instruments. The principal accounting policies adopted are set out below.

Inventories
Inventories are stated at the lower of cost and net realisable value. Cost comprises direct materials and, where applicable, direct labour costs and those overheads that have been incurred in bringing the inventories to their present location and condition. Cost is calculated using the weighted average method. Net realisable value represents the estimated selling price less all estimated costs to completion and costs to be incurred in marketing, selling and distribution. Inventories are comprised of raw materials and work in progress.

Financial Instruments
Financial assets and liabilities are recognised on the Group's balance sheet when the Group has become a party to the contractual provisions of the investment.

Trade receivables
Trade receivables are stated at their nominal value as reduced by appropriate allowances for estimated irrecoverable amounts.

Investments in securities
Investments in securities are recognised on a trade-date basis and are initially measured at cost.

Bank borrowings
Interest-bearing bank loans and overdrafts are recorded at the proceeds received, net of direct issue costs. Finance charges, including premiums payable on settlement or redemption, are accounted for on an accrual basis and are added to the carrying amount of the instrument to the extent that they are not settled in the period in which they arise.

Provisions
Provisions are recognised when the Group has a present obligation as a result of a past event which it is probable will result in an outflow of economic benefits that can be reasonably estimated.

5.1.2. Description

The visual example shows a *Hierarchy* of accounting policies. If you are familiar with something like the outline feature of Microsoft Word then you know exactly what a hierarchy is. There are no real explicit relationship types between concepts within this type of information model because XBRL most taxonomies don't generally distinguish between the types of relations. They could, but they currently do not. As such, we make no distinction between types of relations. Again, by definition everything is a *Hierarchy* unless it is something else.

A *Hierarchy* can always be identified by a software application by the fact that there are no XBRL calculations or XBRL Formulas within the information model.

5.1.3. Extension Points and Extensibility Rules

The following are extension points and extensibility rules for a *Hierarchy* meta pattern:

- Add new dimension (measure)
- Add new domain or member to dimension
- Add new concepts to the *Hierarchy*

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

5.2. Roll Up Meta Pattern

The *Roll Up* meta pattern models what is commonly referred to as a roll up. A roll up is simply two or more concepts which add up to a third concept: Concept A + Concept B = Concept C.

http://www.xbrlsite.com/Metapatterns/2010-08-01/Matrix.html

5.2.1. Visual Example

Sample Company
December 31,
(thousands of dollars)

	2010	2009
ASSETS		
Property, Plant, and Equipment, Net		
Land	5,347	1,147
Buildings, Net	244,508	366,375
Furniture and Fixtures, Net	34,457	34,457
Computer Equipment, Net	4,169	5,313
Other Property, Plant, and Equipment, Net	6,702	6,149
Property, Plant and Equipment, Net, Total	295,183	413,441

5.2.2. Description

The *Roll Up* in the example above simply five concepts which add up to a sixth concept: Land + Buildings, Net + Furniture and Fixtures, Net + Computer Equipment, Net + Other Property, Plant and Equipment, Net = Property, Plant and Equipment, Net, Total. A *Roll Up* can have other Roll Ups within, what amount to sub totals.

A *Roll Up* can always be identified by a software application as it has a set of XBRL Calculations within the XBRL taxonomy.

5.2.3. Extension Points and Extensibility Rules

The following are extension points and extensibility rules for an *Roll Up* meta pattern:

- Add new dimension (measure)
- Add new domain or member to dimension
- Add new concepts to the concepts being rolled up (i.e. a new total concept cannot be added, that would require an entirely new Roll Up); for example, adding "Airplanes" to the Roll Up above

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

5.3. Roll Forward Meta Pattern

The *Roll Forward* meta pattern shows how to model a very common information model found in financial reporting: the roll forward or sometimes called a movement analysis. A roll forward is beginning balance + changes to the balance = ending balance.

http://www.xbrlsite.com/Metapatterns/2010-08-01/Matrix.html

5.3.1. Visual Example

Sample Company
December 31,
(thousands of dollars)

	2010	2009
Roll Forward of Land		
Land, Beginning Balance	1,147	1,147
Additions	1,992	400
Disposals	-193	-200
Translation difference	2,401	-200
Land, Ending Balance	5,347	1,147

5.3.2. Description

The *Roll Forward* above reconciles the beginning balance of Land to the ending balance of Land. The XBRL instance provides Facts for two Roll Forwards, 2010 and 2009. Land, Beginning Balance + Additions – Disposals + Translation Difference = Land, Ending Balance. A *Roll Forward* may have a Roll Up for the total changes between the beginning and ending balance. In this XBRL taxonomy example for this meta pattern; Additions – Disposals + Translation Difference = Total Changes; which is such a *Roll Up*.

A *Roll Forward* can be identified by the XBRL Formula which must be used to verify the computation of the reconciliation, beginning balance + changes = ending balance with a changing Calendar Time [Measure] (i.e. context period).

5.3.3. Extension Points and Extensibility Rules

The following are extension points and extensibility rules for an *Roll Forward* meta pattern:

- Add new dimension (measure)
- Add new domain or member to dimension
- Add new concepts to the *Roll Up* of changes
- Add a new *Roll Up* of changes
- Add new business rules to set of relations

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

5.4. Adjustment Meta Pattern

The *Adjustment* meta pattern shows how to model an adjustment to a prior period financial statement for a change in accounting policy or correction of an error as defined by financial reporting standards. This same approach can be used for making adjustments to other beginning balances not related to financial reporting.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC34-Adjustment/Adjustment_Landing.html

5.4.1. Visual Example

Sample Company
December 31,
(thousands of dollars)

	2010	2009
Changes in Equity		
Prior Period Adjustment		
Retained Earnings (Accumulated Losses), Originally Stated 2009	4,000	
Change in Accounting Policy	3,000	
Correction of an Error	-1,000	
Retained Earnings (Accumulated Losses), Restated 2009 Beginning Balance	6,000	
Changes in Equity		
Retained Earnings (Accumulated Losses), Beginning Balance	6,000	0
Net Income (Loss)	7,000	5,000
Dividends	-1,000	-1,000
Retained Earnings (Accumulated Losses), Ending Balance	12,000	4,000

5.4.2. Description

The example *Adjustment* above reconciles the Retained Earnings (Accumulated Losses), Originally Stated in 2009 to its Restated 2009 Beginning Balance via the Prior Period Adjustments which make up the change. An *Adjustment* is different from a *Roll Forward* in that the *Adjustment* reconciles two report dates, different by the *Report Date [Measure]*, where a Roll Up reconciles between two different points in time, differentiated by the *Calendar Time [Measure]*.

An *Adjustment* can be identified by software applications by the XBRL Formula which computes the adjustment, originally stated + adjustment = restated balance over a changing *Report Date [Measure]*.

5.4.3. Extension Points and Extensibility Rules

The following are extension points and extensibility rules for an *Adjustment* meta pattern:

- Add new dimension (measure)
- Add new domain or member to dimension
- Add new concepts to the hierarchy
- Add new business rules to set of relations

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

5.5. Variance Meta Pattern

The *Variance* business use case models how to articulate different business reporting scenarios for the same reported concept.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC29-Variance/Variance_Landing.html

5.5.1. Visual Example

Sample Company
For Period Ending December 31, 2010

Concept	Actual	Budgeted	Variance
Sales	6,000	5,000	*1,000*
Cost of Goods Sold	4,000	3,000	*1,000*
Contribution Margin	1,000	2,000	*-1,000*
Distribution Costs	1,000	1,000	*0*

5.5.2. Description

A *Variance* reconciles two different reporting scenarios differentiated using the *Reporting Scenarios [Measure]*, in the case here *Actual [Member]* and *Budgeted [Member]*, the difference being the Variance, or *Reporting Scenarios [Domain]*.

A *Variance* can be identified by software applications by the XBRL Formula which computes the variance, Actual [Member] + Budgeted [Member] = Reporting Scenario [Domain], all within the *Reporting Scenario [Measure]*.

[CSH: The Reporting Scenario [Domain] as the variance seems odd to me.]

5.5.3. Extension Points and Extensibility Rules

The following are extension points and extensibility rules for an *Variance* meta pattern:

- Add new dimension (measure)
- Add new domain or member to dimension
- Add new concepts to the hierarchy
- Add new business rules to set of relations

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

5.6. Other Relations Meta Pattern

The *Other Relations* meta pattern models how to articulate information which has other types of relations or very complex computations.

http://www.xbrlsite.com/Metapatterns/2010-08-01/Matrix.html

5.6.1. Visual Example

Sample Company
For Period Ended December 31,

	2010	2009
OTHER INFORMATION		
Earnings Per Share Components		
Net Income (Loss)	10,000,000	20,000,000
Weighted Average Common Shares	100,000,000	100,000,000
Earnings Per Share	0.10	0.20

DRAFT

5.6.2. Description

An *Other Relations* meta pattern is in essence a *Hierarchy* meta pattern with *Business Rules* which express complex relations between numeric values contained in that hierarchy. In the example above, Earnings Per Share is expressed in relation to Net Income and Weighted Average Common Shares. The Weighted Average Common Shares computation is also expressed as a Business Rule. The Business Rules are expressed as XBRL Formulas.

An *Other Relations* meta pattern can always be identified by software as it does not fit into any other meta pattern category. It will have some XBRL Formula, but it will not match any of the other XBRL Formulas patterns.

5.6.3. Extension Points and Extensibility Rules

The following are extension points and extensibility rules for an *Other Relations* meta pattern:

- Add new dimension (measure)
- Add new domain or member to dimension
- Add new concepts to the hierarchy
- Add new business rules to set of relations

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

6. Overview of Business Use Cases

The following provides an overview of the business use cases. This overview sets the perspective. The goal of the business use cases is to collect 100% of the things one would ever run across when creating a business report and showing how to express that collection of use cases appropriately in XBRL.

The business use cases tend to be financial reporting related. This is for two reasons. First, that is where the primary use of XBRL is right now and I am a CPA trying to show other CPAs how to work with XBRL. Second, I am a CPA and that is my primary area of expertise. If one understands these business use cases, one will see that they are general and cover many general business reporting use cases. Are their additional business use cases? Quite likely. This is not a problem, they simply get added to the list.

Here is a summary of the business use cases.

#	Title	Description
BUC01	Simple Hierarchy	Accounting use case. One level hierarchy. No calculation relations.
BUC02	Hierarchy	Variation of Hierarchy. Multi-level nested hierarchy.
BUC03	Simple Roll Up	Accounting use case. Computation where A + B + *n* = C. Simple roll up. No nesting of calculations.
BUC04	Nested Roll Up	Variation of Roll Up. Nesting one calculation inside another calculation.
BUC05	Inverted Roll Up	Variation of Roll Up. Multi-level nested calculations.
BUC06	Multiple Roll Ups	Variation of Roll Up. One concept calculated in more than one way forcing calculations to be separated by extended links.
BUC07	Simple Roll Forward	Accounting use case. Computation where beginning balance + changes = ending balance. Simple roll forward analysis. Also known as movement analysis.
BUC08	Complex Roll Forward	Variation of Roll Forward. Movement of more than one concept modelled using items.
BUC09	Simple Compound Fact	Accounting use case. Concepts which make up a set which must go together. This is actually another pattern with at least one more measure (dimension).
BUC10	Repeating Concept	Variation of Compound Fact. Simple compound concept which repeats.
BUC11	Multiple Periods Compound Concept	Variation of Compound Fact. Simple compound concept which has more than one period disclosed within the compound concept.
BUC12	Roll Forward in Compound Concept	Variation of Roll Forward. Variation of Compound Fact. Roll Forward within a compound concept.
BUC13	Nested Compound Concept	Variation of Compound Fact. Compound concept within another compound concept.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

#	Title	Description
BUC14	Reconciliation of Balance	Accounting use case. Reconciliation of one instant to another instant. (This is NOT a roll forward as the reconciling items are instants, not durations, and the balance concepts are different concepts, not the same.)
BUC15	Text Block	Accounting use case. Many Facts modelled as a block of text.
BUC16	Restatement	Accounting use case. Restatement of income.
BUC17	Reissue Report	Accounting use case. Reissuance of an entire report.
BUC18	Reclassification	Accounting use case. Reclassification of prior balances on a report to conform to current period classifications.
BUC19	Prose	Accounting use case. Information containing multiple paragraphs, tables, lists, etc. which must appear in a particular order to be meaningful.
BUC20	General Comment	Accounting use case. Using XBRL Footnotes to express general comments. Shows the difference between using standard roles and custom roles.
BUC21	Pivot Table	Accounting use case. One concept used in a number of axis. Common for a segment breakdown. Data is similar to a pivot table. Multiple business segments.
BUC22	Reason Not Reported	Accounting use case. Explaining why a piece of information has not been reported.
BUC23	Simple Roll Forward Using Measure	Alternate technical approach to Roll Forward. Simple movement analysis modelled by Barry Smith's approach. (This is the approach the IFRS is pushing)
BUC24	Complex Roll Forward Measure	Alternate technical approach to Roll Forward. Movement of more than one concept modelled using axis.
BUC25	Escaped XHTML	Alternative technical approach to Text Block. Same as the Simple Compound Fact, but expressed as one table in HTML for better formatting control.
BUC26	Using JSON	Alternative technical approach to Text Block. Same as the Simple Compound Fact, but expressing the compound fact using the JSON syntax.
BUC27	Flow	Accounting use case. Shows the notion of flow within a business report and how the ordering or sequencing is important and can be achieved.
BUC28	Other Relations	Accounting use case. Other more complex computations not covered by Roll Up, Roll Forward, Adjustment, or Variance. Other relations, usually complex computations
BUC29	Variance	Accounting use case. Variance between actual and budgeted.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

#	Title	Description
BUC30	Classes	Alternate technical approach to Roll Up. Shows the notion of class. Compare and contrast this to the Simple Roll Up.
BUC31	Add Members Without Extension	Alternate technical approach to creating Measures. Show how extension can be achieve without the need to extend an XBRL taxonomy.
BUC34	Adjustment	Accounting use case. Adjustment of a balance between two report dates. Calendar time remains constant.
BUC35	Grouped Report	Variation of Compound Fact. Fact Group which contains multiple Measures unique to the Fact Group.
BUC99	Non Financial Information	Variation of Compound Fact. Non financial information can be expressed in XBRL as well as financial information.

Are there more business use cases? Quite likely. Someone would have a hard time proving that things on the list above are not business reporting use cases. If there are other business use cases, they can simply be added. The key thing to understand is that business reporting is not random and it is not infinite. If one applies the 80/20 rule, focusing on the 80 percent is a good place to focus.

6.1. Overview of what is Provided for Each Business Use Case

The following is a summary of what is provided for each business use case:

- **Visual Example**: This is a physical rendering of what the business use case might look like on paper.
- **Meta patterns employed**: A summary of the meta patterns employed in the business use case.
- **Description**: A brief description of the important characteristics of the business use case. This provides the big picture.
- **Important characteristics and dynamics**: A summary of the important characteristics and dynamics which you should be focused on when looking at the specific business use case. This provides the intimate details.
- **Intelligent business document**: this is what a meat and potatoes rendering of the information might look like. The intension is to show and explain what the XBRL taxonomy and XBRL instance would look like in order that you will be able to construct them.

6.2. Overview of Additional Information on Web

There is additional information available on the Web for each of the business use cases. See:

http://www.xbrlsite.com/Patterns/2010-08-01/Matrix.html

- **Visualization Example**: PDF rendering of the business use case. Same as the Visual Example in this document.
- **Auto Generated Rendering**: Same as the Intelligent Business Document in this document.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

- **XBRL Instance**: The XBRL instance for the business use case.
- **XBRL Taxonomy**: The XBRL taxonomy for the business use case.
- **BRM Measure Relations Info Set**: Measure Relations info set generated by an XBRL processor for the XBRL taxonomy.
- **BRM Fact Groups Info Set**: Fact Groups info set generated by an XBRL processor for the XBRL instance.
- **XBRL Formulas**: Business Rules for the business use case.
- **XBRL Formulas Validation Results**: Validation results against the business rules of this use case.
- **XBRL Calculations Validation**: Business rules for certain computations for the business use case.
- **XSLT to Render XBRL Instance**: The XSLT style sheet used to generated the PDF mentioned above.

6.3. Intention of the Business Use Cases

This document is not intended to show you how to understand the basics of XBRL, it is assumed that you already have a basic understanding. What the information is intended to provide is insights into the intimate details of what you will run across in real world situations when working with XBRL.

That said, the small, simple use cases can in fact be quite helpful in helping one grasp an understanding of the basics of using XBRL. If you are not experienced with XBRL, then your first pass through this material could be focused on the basics. But, then go through it a second or even third time in order to understand the subtleties and intimate details. That is the intent, that should be your real focus.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7. Business Use Cases

In this section we explore common business use cases of reporting. While these use cases tend to be financial reporting oriented, you should look beyond that characteristic and think more in terms of more general business use cases.

The reason financial reporting use cases are used here is that one of the primary uses of XBRL today is for financial reporting and I wanted to address the need to understand financial reporting type business use cases. Also, I am a CPA, financial reporting is my domain of understanding.

Further, look at it this way: Mathematics is used in accounting, engineering, medicine, architecture, science, and other domains. Yet mathematics is exactly the same in each domain, it is only applied solving different domain problems. This is likewise the case for the information modelling of either financial or non financial information.

Keep this information about the business use cases in the back of your mind as you explore the business use cases:

- The business use cases are made up of meta-patterns. The building blocks of each use case is one or more of the fundamental meta-patterns. The fundamental meta-patterns are: *Hierarchy*, *Roll Up*, *Roll Forward*, *Complex Relation*, *Adjustment*, and *Variance*.
- The meta-patterns are common occurrences in business reports. Any business report can be broken down to its essence which is the meta-patterns.
- The meta-patterns have a common base which is the Business Reporting Logical Model. The Business Reporting Logical Model is similar to other logical models, it's role is to make things easier to understand. For example, you are familiar with the electronic spreadsheet such as Excel. Electronic spreadsheets are made up of workbooks, worksheets, columns, rows, cells, etc. These components have relationships, a workbook is made up of worksheets; a worksheet is made up of columns and rows which intersect into cells. The purpose of such a logical model is to make things easier to relate to.
- Presenting information and defining information are two different things. If information is defined or modelled correctly, it can be presented in many different ways, based on the preferences of different users, and it still make sense. Modelling information for presentation alone locks that information into that one presentation.

There are advantages to being able to automatically exchange information between two different business systems. To make such an exchange work one needs some technical stuff (syntax), some business stuff (semantics), and some workflow stuff (processing). Weaving these together correctly (agreement) can make such automated business information exchange work well (effectively and efficiently), and therefore possible. This creates business benefits such as increased effectiveness, increased efficiency, reduced costs, etc.

Not all information can be exchanged in automated processes. Some automated processes will need to have a business person involved in the process workflow. Other information will not.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.1. BUC01 - Simple Hierarchy

The *Simple Hierarchy* business use case shows how to model information which has no computation type relations, but have some sort of relationship.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC01-SimpleHierarchy/SimpleHierarchy_Landing.html

7.1.1. Visual Example

Sample Company
For Period Ending December 31,
(thousands of dollars, except number of employees)

	2010	2009	2008	2007	2006
Sales, Net	1,500	1,400	1,300	1,200	1,100
Income (Loss) from Continuing Operations	500	400	300	200	100
Net Income (Loss)	51	41	31	21	11
Cash Flow Provided by (used in) Operating Activities, Net	5,000	4,000	3,000	2,000	1,000
Capital Additions	1,000	650	550	450	350
Average Number of Employees	300	290	280	270	260

7.1.2. Meta-pattern(s) employed

Hierarchy

7.1.3. Description

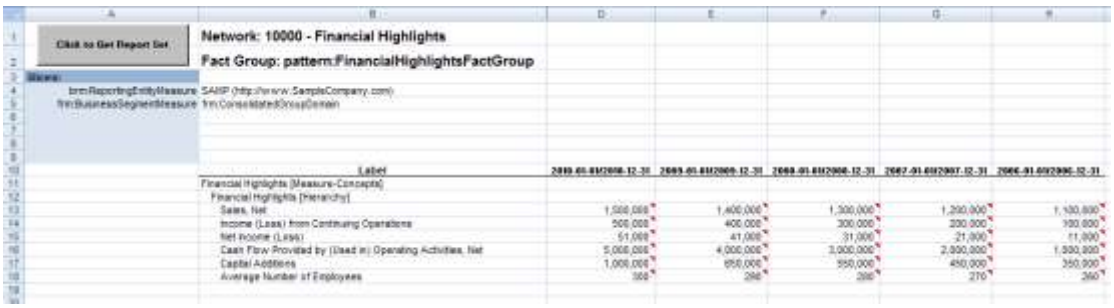
Financial highlights reported by an organization are a good example of a simple hierarchy. The key idea here is to show that pieces of information have relationships, but those relationships can be quite simple in nature.

7.1.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- This use case reports six facts for five periods, a total of 30 pieces of information.
- This use case shows all numeric information, although there are two types of numeric information: monetary and pure values.
- The concepts are for the most part unrelated, coming from different parts of a financial statement. By unrelated we mean no numeric relationship or computation and no deep hierarchy, the information is simply a flat list of facts which are reported.

7.1.5. Extraction



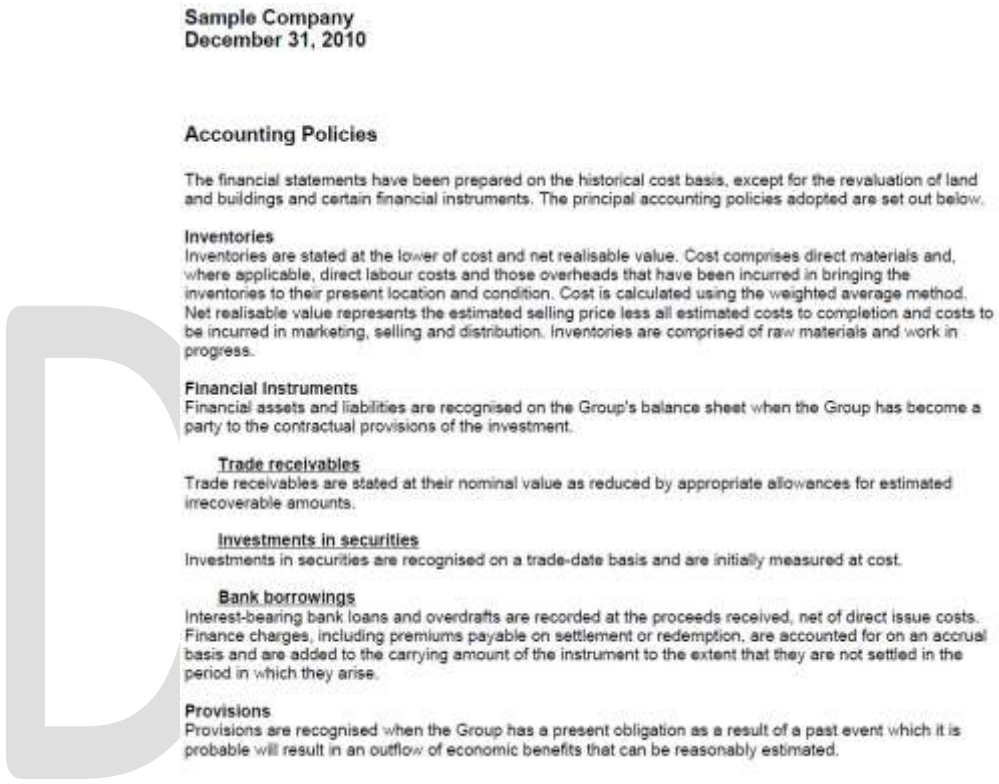
This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.2. BUC02 – Hierarchy

The *Hierarchy* business use case shows how to model what is commonly referred to as a hierarchy or a tree of information. Think about how the outline view of a Microsoft Word document.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC02-Hierarchy/Hierarchy_Landing.html

7.2.1. Visual Example



Sample Company
December 31, 2010

Accounting Policies

The financial statements have been prepared on the historical cost basis, except for the revaluation of land and buildings and certain financial instruments. The principal accounting policies adopted are set out below.

Inventories
Inventories are stated at the lower of cost and net realisable value. Cost comprises direct materials and, where applicable, direct labour costs and those overheads that have been incurred in bringing the inventories to their present location and condition. Cost is calculated using the weighted average method. Net realisable value represents the estimated selling price less all estimated costs to completion and costs to be incurred in marketing, selling and distribution. Inventories are comprised of raw materials and work in progress.

Financial Instruments
Financial assets and liabilities are recognised on the Group's balance sheet when the Group has become a party to the contractual provisions of the investment.

Trade receivables
Trade receivables are stated at their nominal value as reduced by appropriate allowances for estimated irrecoverable amounts.

Investments in securities
Investments in securities are recognised on a trade-date basis and are initially measured at cost.

Bank borrowings
Interest-bearing bank loans and overdrafts are recorded at the proceeds received, net of direct issue costs. Finance charges, including premiums payable on settlement or redemption, are accounted for on an accrual basis and are added to the carrying amount of the instrument to the extent that they are not settled in the period in which they arise.

Provisions
Provisions are recognised when the Group has a present obligation as a result of a past event which it is probable will result in an outflow of economic benefits that can be reasonably estimated.

7.2.2. Meta-pattern(s) employed

Hierarchy

7.2.3. Description

The *Hierarchy* builds on the *Simple Hierarchy* business use case, introducing the notion that a hierarchy can have sub-hierarchies. There is no way to really distinguish the sub-categories as there is only way to articulate a relation.

7.2.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- The *Simple Hierarchy* shows a flat hierarchy which contains all numbers. In contrast, *Hierarchy* business use case shows a nested hierarchy of text. There is really very little difference between these two use cases.
- A hierarchy can be created to any depth.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

- When modelling a hierarchy, ask yourself "Why am I making this a child of this concept rather than a sibling?" Some reason to make a concept a child or a sibling of another concept should exist.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.3. BUC03 - Simple Roll Up

The *Simple Roll Up* business use case shows how to model what is commonly referred to as a roll up. A roll up is simply two or more concepts which add up to a third concept: Concept A + Concept B = Concept C.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC03-SimpleRollUp/SimpleRollUp_Landing.html

7.3.1. Visual Example

Sample Company
December 31,
(thousands of dollars)

	2010	2009
ASSETS		
Property, Plant, and Equipment, Net		
Land	5,347	1,147
Buildings, Net	244,508	366,375
Furniture and Fixtures, Net	34,457	34,457
Computer Equipment, Net	4,169	5,313
Other Property, Plant, and Equipment, Net	6,702	6,149
Property, Plant and Equipment, Net, Total	295,183	413,441

7.3.2. Meta-pattern(s) employed

Roll Up

7.3.3. Description

The *Roll Up* business use case introduces the notion of numeric relations between concepts. In the case of a *Roll Up* computation, several concepts add up to some total concept. Basically, a *Roll Up* builds on a *Hierarchy* in that it adds the business rules of the computation to the hierarchy of concepts.

7.3.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- A Roll Up articulates the relations: A + B + *n* = Total, where *n* means any number of concepts.
- A Roll Up may have only one total concept.
- The relation may be + or – (plus or minus).
- Notice that all of the concepts in this *Roll Up* have a balance type of DEBIT.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.4. BUC04 - Nested Roll Up

The *Nested Roll Up* business use case is a variation of the *Roll Up* business use case where one or more additional roll ups are contained within another roll up.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC04-NestedRollUp/NestedRollUp_Landing.html

7.4.1. Visual Example

Sample Company
December 31,
(thousands of dollars)

	As of December 31,	
	2010	2009
CURRENT		
Foreign	200	250
Domestic	50	250
Current	250	500
DEFERRED		
Foreign	200	250
Domestic	50	250
Deferred	250	500
Income Tax Expense (Benefit)	500	1,000

7.4.2. Meta-pattern(s) employed

Roll Up

7.4.3. Description

A *Nested Roll Up* builds on the *Roll Up* showing that a Roll Up may contain other *Roll Ups*. These are sub totals. In this example, the grand total Income Tax Expense (Benefit) is broken down by the sub totals Current and Deferred. Each of those sub totals is broken down by its Foreign and Domestic components.

Alternatively, the sub totals could have been Foreign and Domestic with those sub totals then broken down by their Current and Deferred components. Or, both of these breakdowns could have been provided, see the *Multiple Roll Ups* use case.

7.4.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- A *Roll Up* can have another *Roll Up* nested within it.
- Any depth of nesting is allowed.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.5. BUC05 - Inverted Roll Up

The *Inverted Roll Up* business use case points out that roll ups can appear to be inverted. This business use case is really no different than a Roll Up other than it has a number of deeply nested roll ups.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC05-InvertedRollUp/InvertedRollUp_Landing.html

7.5.1. Visual Example

Sample Company
December 31,
(thousands of dollars)

	For Year Ended December 31,	
	2010	2009
Revenues, Gross	1,000	2,000
Returns and Allowances	-1,000	-2,000
Revenues, Net	0	0
Cost of Sales	-1,000	-2,000
Gross Profit (Loss)	-1,000	-2,000
Other Operating Expenses	-1,000	-2,000
Other Operating Income	1,000	2,000
Operating Income (Loss)	-1,000	-2,000
Nonoperating Expenses (Income)	1,000	2,000
Income (Loss) from Continuing Operations Before Income Taxes	0	0
Income Tax Expense (Benefit)	1,000	2,000
Net Income (Loss)	-1,000	-2,000

7.5.2. Meta-pattern(s) employed

Roll Up

7.5.3. Description

An *Inverted Roll Up* again builds on the *Roll Up* and *Nested Roll U*p showing what amounts to a more complex nesting which makes the *Roll Up* look inverted, or up-side-down.

The presentation of the information articulated within a Roll Up is dependent on the software application which is generating the presentation. There is nothing in XBRL which says Roll Ups need to be presented up-side-down. However, many software interfaces do work this way.

7.5.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- There is no real difference between a *Roll Up*, a *Nested Roll Up*, and an *Inverted Roll Up* other than the number of nesting levels.
- Notice in this use case that the concepts are both debits and credits. The weight in the XBRL calculations determines whether the relation is abdicative or subtractive in nature.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

- There is a relation between the balance type of a concept and the weight which is used. There is no relation between the balance type and the presentation of the concept as positive or negative. Many business users get confused by this and believe that there is a relation.
- Software interfaces are free to present information as positive or negative. Automated processes need clarity about the polarity of numeric values relative to other numeric values.
- Numeric concepts which do not have a balance type must have the polarity of the concept defined within the concept's documentation to make the polarity clear.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.6. BUC06 - Multiple Roll Ups

The *Multiple Roll Ups* business use case is a variation of a Roll Up where one concept is the total concept of two or more unique Roll Ups.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC06-MultipleRollUps/MultipleRollUps_Landing.html

7.6.1. Visual Example

Sample Company
December 31,
(thousands of dollars)

	2010	2009
TRADE AND OTHER RECEIVABLES		
Trade and Other Receivables, Net, by Component		
Trade Receivables, Net	8,790	6,431
Financing Lease Receivables, Net	2,498	1,263
Other Receivables, Net	1,305	1,096
Trade and Other Receivables, Net	12,593	8,790
Trade and Other Receivables, Net, by Net/Gross		
Trade and Other Receivables, Gross	18,280	13,472
Allowance for Doubtfull Accounts	-5,687	-4,682
Trade and Other Receivables, Net	12,593	8,790
Trade and Other Receivables, Net, by Current/Noncurrent		
Trade Receivables, Net, Current	6,340	5,701
Trade Receivables, Net, Noncurrent	6,253	3,089
Trade and Other Receivables, Net	12,593	8,790

7.6.2. Meta-pattern(s) employed

Roll Up

7.6.3. Description

The *Multiple Roll Ups* business use case points out that a concept might have any number of ways to break down a total concept. To avoid conflicts, these different computations need to be separated into different Networks. Networks can be thought of in the same way that broadcast networks send signals using different frequencies in order to separate the different television channels so the signals do not conflict. In this example, Trade and Other Receivables, Net is aggregated in three different ways: by component, by net/gross, and by current/noncurrent.

7.6.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- Different aggregations of the same number need to be put into separate Networks in order to avoid conflicts.
- Be sure to keep the presentation, calculation, and definition Networks synchronized in order to be clear as to which set of aggregations go with which set of XBRL breakdowns (i.e. presentation, calculation, definition).

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.7. BUC07 - Simple Roll Forward

The *Simple Roll Forward* business use case shows how to model a very common information model found in financial reporting: the roll forward or sometimes called a movement analysis. A roll forward is beginning balance + changes to the balance = ending balance.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC07-SimpleRollForward/SimpleRollForward_Landing.html

7.7.1. Visual Example

Sample Company
December 31,
(thousands of dollars)

	2010	2009
Roll Forward of Land		
Land, Beginning Balance	1,147	1,147
Additions	1,992	400
Disposals	-193	-200
Translation difference	2,401	-200
Land, Ending Balance	5,347	1,147

7.7.2. Meta-pattern(s) employed

Roll Forward, Roll up

7.7.3. Description

The *Simple Roll Forward* introduces a different type of computation, different from the *Roll Up*. A *Roll Forward* is a reconciliation of a balance between two different points in time (i.e. *Calendar Time [Measure]*). Another term for a roll forward is a movement analysis. The formula is: Beginning balance + Changes = Ending Balance. The beginning and ending balance is always the same concept at two different points in time.

A *Roll Forward* may contain a Roll Up which breaks down the details of the Changes. In the example, the Changes is detailed to be Additions, Disposals, and Translation Difference.

7.7.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- A *Roll Forward* always reconciles a concept balance between two different points in time. The balance is always an instant, the changes is always a duration.
- A *Roll Forward* computation cannot be expressed using XBRL calculations because all XBRL calculations must be within the exact same context. The balance concept is at two different points in time, therefore two different contexts. Further, the changes are in a third context.
- XBRL Formulas can be used to create a business rule to validate a *Roll Forward* computation.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.8. BUC08 - Complex Roll Forward

The *Complex Roll Forward* business use case shows how to model what amounts to several *Roll Forwards* combined into one set of information.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC08-ComplexRollForward/ComplexRollForward_Landing.html

7.8.1. Visual Example

Sample Company
December 31,
(thousands of dollars)

	Land	Buildings, Net	Furniture and Fixtures, Net	Other Property, Plant and Equipment, Net	Property, Plant, and Equipment, Net
Balance at December 31, 2008	1,000	1,000	1,000	1,000	4,000
Additions	1,000	1,000	1,000	1,000	4,000
Disposals	-1,000	-1,000	-1,000	-1,000	-4,000
Translation Difference	0	0	0	0	0
Other Increase (Decrease)	0	0	0	0	0
Balance at December 31, 2009	1,000	1,000	1,000	1,000	4,000
Additions	1,000	1,000	1,000	1,000	4,000
Disposals	-1,000	-1,000	-1,000	-1,000	-4,000
Translation Difference	0	0	0	0	0
Other Increase (Decrease)	0	0	0	0	0
Balance at December 31, 2010	1,000	1,000	1,000	1,000	4,000

7.8.2. Meta-pattern(s) employed

Roll Forward, Roll up

7.8.3. Description

The *Complex Roll Forward* builds on the *Simple Roll Forward*, adding multiple *Roll Forwards* which then aggregate to a *Roll Forward* of the total *Roll Forward*. In the example, *Roll Forwards* for Land; Buildings, Net; Furniture and Fixtures, Net; Other Property, Plant and Equipment, Net aggregate to the *Roll Forward* of the total Property, Plant and Equipment.

7.8.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- The *Roll Ups* for the changes can be expressed and validated using XBRL calculations. In the example, this computation is vertical in nature.
- The *Roll Up* of each concept to the total for Property, Plant and Equipment, Net can likewise be expressed using XBRL calculations. For example, Additions for each category of Property, Plant and Equipment aggregates to the concept for all categories of Property, Plant and Equipment. This relation can be seen horizontally in the example.
- The *Roll Forward* of each balance must be expressed using XBRL Formulas.
- Note that the classes of Property, Plant and Equipment could have been presented in the rows and the different balances and changes expressed in the columns. There is no difference in how the business use case is modelled however. How concepts are presented and how they are modelled are not the same thing. This is true for all business use cases, this use case is points out that general notion.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.9. BUC09 - Simple Compound Fact

The *Simple Compound Fact* business use case shows how to model what amounts set of information which must go together to make any sense.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC09-SimpleCompoundFact/SimpleCompoundFact_Landing.html

7.9.1. Visual Example

Sample Company
For Period Ending December 31, 2010

Director	Salary	Bonus	Director Fee	Options Granted, at Fair Value
pattern:JohnDoeMember	1,000	1,000	1,000	1,000
pattern:JaneDoeMember	1,000	1,000	1,000	1,000
frm:DirectorsAllDomain	2,000	2,000	2,000	2,000

7.9.2. Meta-pattern(s) employed

Hierarchy

7.9.3. Description

The *Simple Compound Fact* business use case shows the notion of a compound fact. A compound fact is a set of facts which must go together to make sense. A compound fact always has at least one Measure (meaning it could be several measures, see *Grouped Report*) which is what distinguishes one set of facts with another set of facts.

In this example, the *Director [Measure]* is used to distinguish one director from the other and each director from the total for all directors. The Salary; Bonus; Director Fee; and Options Granted, at Fair Value are provided for each director and for the total for all directors.

7.9.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- A compound fact always has at least one Measure which distinguishes the different sets of facts and the aggregate for all the Measures. A compound fact is not a meta pattern.
- A compound fact is like the row of a data base table. The Measure for the compound fact is like the key for the table containing the rows of the compound fact. If more than one Measure is provided, that is like a composite key for the table.
- This Simple Compound Fact business use case introduces the notion of a dimensional aggregation. The computation of the total Salary, as an example, for all directors is NOT a Roll Up as each director and the total of all directors are different XBRL contexts and therefore XBRL calculations cannot be utilized. XBRL Formulas must be used to express this dimensional aggregation. This aggregate value, may or may not tie to some other Fact Value within an XBRL instance.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.10. BUC10 - Repeating Concept

The *Repeating Concept* business use case shows how to model what amounts to a set of information which repeats an unknown number of times.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC10-RepeatingConcept/RepeatingConcept_Landing.html

7.10.1. Visual Example

Sample Company
For Period Ending December 31, 2010

SUBSEQUENT EVENTS

The following is a summary of events subsequent to the balance sheet date:

Description of subsequent event number 1 which relates to the loss of an uncollectable receivable and occurred on January 16, 2011.

Description of subsequent event number 2 which relates to the purchase of a business and occurred on February 1, 2011.

7.10.2. Meta-pattern(s) employed

Hierarchy

7.10.3. Description

The *Repeating Concept* business use case builds on the *Simple Compound Fact* use case, showing that compound facts repeat.

In this example, the subsequent event repeats. Each subsequent event is uniquely described by the Subsequent Event Description [Measure] value or Member.

7.10.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- Compound facts repeat. You might only have one compound fact in your XBRL instance, but you might also have any unknown number of such compound facts.
- In this case, the Domain of the Subsequent Event Description [Measure] would never be used in an XBRL instance as total or aggregate information is never provided for "Total Subsequent Events". There is no way to distinguish a Domain which is usable and a Domain which is not usable.
- In other cases, compound facts do have dimensional aggregations and the aggregated value ties to some other summary Fact Value within an XBRL instance.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.11. BUC11 - Multiple Periods Compound Concept

The *Multiple Periods Compound Concept* business use case shows how to model what amounts to a *Compound Concept* which is reported for multiple periods.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC11-MultiplePeriodsCompoundConcept/MultiplePeriodsCompoundConcept_Landing.html

7.11.1. Visual Example

Sample Company
For Period Ending December 31, 2010

The following is a summary of leasehold land and buildings as of December 31, 2010 and 2009:

State	Location	Description	Tenure	Tenure Start Date	Land Area	2010 Value (at Cost)	2009 Value (at Cost)
pattern:WashingtonMember	Tacoma, Washington	Warehouse	Fifteen year lease	2000-01-01	1,000	5,000	4,000
pattern:WashingtonMember	Seattle, Washington	Warehouse	Twenty year lease	2000-01-01	100,000	50,000	40,000
			Total		101,000	55,000	44,000

7.11.2. Meta-pattern(s) employed

Hierarchy

7.11.3. Description

The *Multiple Periods Compound Concept* business use case shows something quite common in financial reporting which is to provide values for both the current and prior period to describe some concept. Understanding why the values for the current period and prior period are contextual information and why they should not be concepts helps make an important distinction when modelling information using XBRL.

7.11.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- Notice that the current period and prior period are contexts provided by the XBRL instance, not concepts of the XBRL taxonomy.
- Compare and contrast this use case with the *Compound Concept* use case.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.12. BUC12 - Roll Forward in Compound Concept

The *Roll Forward in Compound Concept* business use case shows how to model a *Roll Forward* which is related to some other set of information. This is similar to a *Nested Compound Concept* business use case.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC12-RollForwardInCompoundConcept/RollForwardInCompoundConcept_Landing.html

7.12.1. Visual Example

Sample Company
December 31,
(thousands of dollars)

SHARE OWNERSHIP PLANS

The following is information relating to share ownership plan: pattern:ShareOwnershipPlan1Member .

These are the description, general conditions, and terms of share ownership plan 1. Nam rhoncus mi. Nunc eu dui non mauris interdum tincidunt. Sed magna felis, accumsan a, fermentum quis, varius sed, ipsum. Nullam leo. Donec eros. Maecenas interdum, lectus eget aliquet tincidunt, tellus dolor ultrices tellus, nec hendrerit nunc lectus eget eros. Duis feugiat velit in eros. Curabitur tincidunt aliquet neque. Nulla ac est quis urna luctus elementum. Aliquam erat volutpat. In tincidunt nunc vehicula risus. Praesent dictum arcu sit amet wisi. Praesent ac odio. Donec vestibulum, sem vel facilisis consectetuer, justo arcu tempor sem, vel ultrices turpis leo quis augue.

Reconciliation of Outstanding Balance:

Type	Outstanding 2009	Granted	Forfeited	Exercised	Expired	Outstanding 2010
pattern:ShareOwnershipPlan1Member	0	4,000	-1,000	-1,000	-1,000	1,000

7.12.2. Meta-pattern(s) employed

Roll Forward, Hierarchy

7.12.3. Description

The *Roll Forward in Compound Concept* shows exactly that, a *Roll Forward* use case modelled within a Compound Concept use case. Basically the Roll Forward is part of the set of information which repeats. Specifically in this example, the share ownership plan is required to disclose a certain set of information part of which is the roll forward of the outstanding balance.

7.12.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- The only thing added to this business use case is the *Roll Forward*. A Roll Forward within a Compound Concept is the same as one outside.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.13. BUC13 - Nested Compound Concept

The *Nested Compound Concept* business use case shows how to model what amounts to two sets of information which are interrelated.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC13-NestedCompoundConcept/NestedCompoundConcept_Landing.html

7.13.1. Visual Example

Sample Company
December 31,
(thousands of dollars)

RELATED PARTY TRANSACTIONS

The following is a summary of related party of the company and transactions with those related parties. (Notice how the Related Party Name [Measure] connects the two tables of information together):

Related Parties:

Name of Related Party	Type of Relationship	Nature of Relationship
pattern:RelatedParty1Member	Parent	This is other descriptive information about the relationship.
pattern:RelatedParty2Member	JointVenture	This is other descriptive information about the relationship.

Transactions with Related Parties:

Party	Transaction Description	Pricing Policy	Amount
pattern:RelatedParty1Member	Transaction 1 description	Cost	1000
pattern:RelatedParty1Member	Transaction 2 description	Cost	1000
pattern:RelatedParty2Member	Transaction 1 description	Cost	1000
pattern:RelatedParty2Member	Transaction 2 description	Cost	1000

7.13.2. Meta-pattern(s) employed

Hierarchy

7.13.3. Description

The *Nested Compound Concept* business use case models a compound fact nested within another compound fact. In this specific case the compound fact related parties has the compound fact transactions with related parties within it. This is because a company may have many related parties and each of those related parties might have from zero to many related party transactions.

7.13.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- Notice that each of the compound facts has at least one Measure which is common to both compound facts which connects to two compound facts. In this example, the Related Party [Member] is what connects the two compound facts.
- Note that XBRL Dimensions hypercubes may not be nested.
- The type of relationship here is common to the "master table" and "detailed" table of a relational database. For example, the invoice master table and the invoice line items detailed table.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.14. BUC14 - Reconciliation of Balance

The *Reconciliation of Balance* business use case shows how to model a reconciliation of one balance to another balance. Note that this has characteristics of a *Roll Forward* business use case or *Adjustment* business use case, but is different than those use cases.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC14-ReconciliationOfBalance/ReconciliationOfBalance_Landing.html

7.14.1. Visual Example

Sample Company
December 31,
(thousands of dollars)

	2010	2009
Cash and Cash Equivalents, per Balance Sheet	1,000	1,000
Reconciling Item A	500	500
Reconciling Item B	-500	500
Cash and Cash Equivalents, per Cash Flow Statement	1,000	2,000

7.14.2. Meta-pattern(s) employed

Hierarchy

7.14.3. Description

The Reconciliation of Balance business use case reconciles two different concepts at the same point in time. In the example shown, Cash and Cash Equivalents per the balance sheet is reconciled to Cash and Cash Equivalents per the cash flow statement. (The example assumes that the two balances are different.)

7.14.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- Contrast this use case with the *Roll Forward*, *Adjustment*, and *Variance* use cases. Each of these are different types of reconciliations.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.15. BUC15 - Text Block

The *Text Block* business use case shows how to use a text block to articulate a complex set of information as a set, rather than breaking the pieces of information into individual components. Please note the Prose and Escaped XHTML business use cases.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC15-TextBlock/TextBlock_Landing.html

7.15.1. Visual Example

Sample Company
For Period Ending December 31, 2010

DIRECTOR COMPENSATION

The following is a summary of director compensation for the period ended December 31, 2010:

Name of director	Salary	Bonus	Director fees	Fair Value of Options Granted
Jane Doe	1,000	1,000	1,000	1,000
John Doe	1,000	1,000	1,000	1,000
Total	2,000	2,000	2,000	2,000

DRAFT

7.15.2. Meta-pattern(s) employed

Hierarchy

7.15.3. Description

The *Text Block* business use case shows how a complex set of information can be communicated to users of the information, rather than provided details for the components of the complex set. In this example, one concept is used to communicate information about director compensation.

Because of formatting considerations and little control over text other than tabs, spaces, and line feeds; the Escaped XHTML or Prose approaches are preferred over this approach.

7.15.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- One Fact Value is used to articulate a more complex set of information. The up side is that articulating the information is easier. The down side is that the user of the information cannot get to the details, only to the set of information.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.16. BUC16 – Restatement

The *Restatement* business use case shows how to model an accounting restatement due to a change in accounting policy or the correction of an error.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC16-Restatement/Restatement_Landing.html

7.16.1. Visual Example

Sample Company
December 31,
(dollars)

	2010	2009 (Restated)
Balance Sheet (Fragment)		
Equity		
Common Stock	5,000,000	5,000,000
Retained Earnings	10,850,000	10,700,000
Total Equity	15,850,000	15,700,000

	2010	2009 (Restated)	2009 (Previous)
Income Statement (Fragment)			
Gross Sales	1,500,000	1,000,000	1,000,000
Cost of sales	500,000	200,000	200,000
Net sales	1,000,000	800,000	800,000
Operating expenses (*)	350,000	1,600,000	300,000
Net income (loss)	650,000	-800,000	500,000

Statement of Changes in Equity (Fragment)	2010	2009
Prior Period Adjustment		
Retained Earnings (Accumulated Losses), Originally Stated 2009	12,000,000	
Change in Accounting Policy	0	
Correction of an Error	-1,300,000	
Retained Earnings (Accumulated Losses), Restated 2009 Beginning Balance	10,700,000	
Changes in Equity		
Retained Earnings (Accumulated Losses), Beginning Balance	10,700,000	12,300,000
Net Income (Loss)	650,000	-800,000
Dividends	-500,000	-800,000
Retained Earnings (Accumulated Losses), Ending Balance	10,850,000	10,700,000

7.16.2. Meta-pattern(s) employed

Roll Forward, Roll Up, Hierarchy, Adjustment

7.16.3. Description

The Restatement business use case shows how to model an accounting restatement due to a prior period adjustment from an accounting error or a change in accounting policy. Also see the Adjustment business use case.

7.16.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

- Notice how the moving pieces of this use case impact multiple areas of the example including the balance sheet, income statement, and the statement of changes in equity.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.17. BUC17 - Reissue Report

The *Reissue Report* business use case shows how to reissue a business report for, say, a report which has been recalled because of a major problem.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC17-ReissueReport/ReissueReport_Landing.html

7.17.1. Visual Example

Sample Company
December 31,
(thousands of dollars)

	2010	2009
ASSETS		
Property, Plant, and Equipment, Net		
Land	5,347	1,147
Buildings, Net	244,508	366,375
Furniture and Fixtures, Net	34,457	34,457
Computer Equipment, Net	4,169	5,313
Other Property, Plant, and Equipment, Net	6,702	6,149
Property, Plant and Equipment, Net, Total	295,183	413,441

COMMENTS:

(*) BRM Comment: This report has been reissued on March 2, 2011. The original report issued on February 15, 2011 contained a significant mistake. The amounts for Land and Building were transposed.

7.17.2. Meta-pattern(s) employed

Any, example uses Roll Up

7.17.3. Description

The Reissue Report business use case shows how the reissuance of a financial statement can be handled. Note that the entire report is reissued, resulting in a different report date.

7.17.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- To do.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.18. BUC18 – Reclassification

The *Reclassification* business use case shows how to model information which was reported with one classification in a prior period but has been reclassified in a current report to conform to the current classifications of the information. This is a classic accounting reclassification of, say, balance sheet line items.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC18-Reclassification/Reclassification_Landing.html

7.18.1. Visual Example

Sample Company
December 31,
(thousands of dollars)

	2010	2009	*Previous 2009*
ASSETS			
Property, Plant, and Equipment, Net			
Land	5,347	1,147	*1,147*
Buildings, Net	244,508	366,375	*366,375*
Furniture and Fixtures, Net	34,457	34,457	*34,457*
Computer Equipment, Net	4,169	5,313	
Other Property, Plant, and Equipment, Net	6,702	6,149	*11,462*
Property, Plant and Equipment, Net, Total	295,183	413,441	*413,441*

POLICIES:

Prior period classifications have been restated to conform to current period classifications.

7.18.2. Meta-pattern(s) employed

Any, example uses Roll Up

7.18.3. Description

The *Reclassification* business use case shows how to handle an accounting reclassification. In this case, Other Property, Plant, and Equipment, Net previously reported as $11,462 is broken out into its components for the prior period 2009 classification in order to be consistent with the current period 2010 classification.

7.18.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- The reclassification is pointed out using an XBRL footnote which has a specific role which identifies the XBRL footnote as relating to a reclassification.
- If a more general XBRL footnote were used (i.e. no specific role for this category of footnote) then users would need to sift through all other XBRL footnotes to find any reclassifications. Categorization has the advantage of being able to easily identify reclassifications.
- Usually a disclosure of the reclassifications would be made, this use case does not address this issue, rather it focuses on showing how the details of the reclassification can be identified.

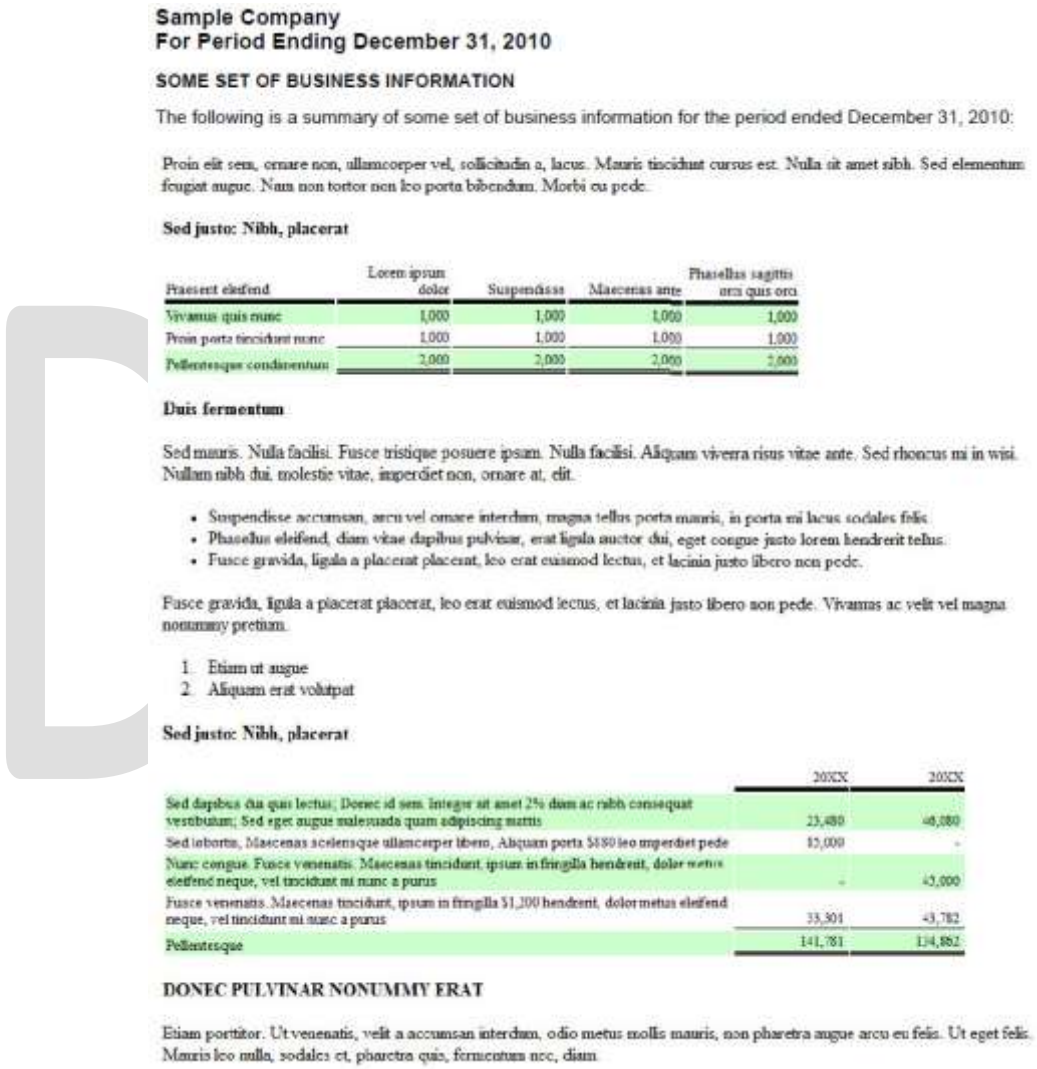
This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.19. BUC19 – Prose

The *Prose* business use case shows how to model prose or information which has sophisticated formatting such as tables, lists, paragraphs which should be read in a specific order, etc.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC19-Prose/Prose_Landing.html

7.19.1. Visual Example



Sample Company
For Period Ending December 31, 2010

SOME SET OF BUSINESS INFORMATION

The following is a summary of some set of business information for the period ended December 31, 2010:

Proin elit sem, ornare non, ullamcorper vel, sollicitudin a, lacus. Mauris tincidunt cursus est. Nulla sit amet nibh. Sed elementum feugiat augue. Nam non tortor non leo porta bibendum. Morbi eu pede.

Sed justo: Nibh, placerat

Praesent eleifend	Lorem ipsum dolor	Suspendisse	Maecenas ante	Phasellus sagittis arcu quis orci
Vivamus quis nunc	1,000	1,000	1,000	1,000
Proin porta tincidunt nunc	1,000	1,000	1,000	1,000
Pellentesque condimentum	2,000	2,000	2,000	2,000

Duis fermentum

Sed mauris. Nulla facilisi. Fusce tristique posuere ipsum. Nulla facilisi. Aliquam viverra risus vitae ante. Sed rhoncus mi in wisi. Nullam nibh dui, molestie vitae, imperdiet non, ornare at, elit.

- Suspendisse accumsan, arcu vel ornare interdum, magna tellus porta mauris, in porta mi lacus sodales felis.
- Phasellus eleifend, diam vitae dapibus pulvinar, erat ligula auctor dui, eget congue justo lorem hendrerit tellus.
- Fusce gravida, ligula a placerat placerat, leo erat euismod lectus, et lacinia justo libero non pede.

Fusce gravida, ligula a placerat placerat, leo erat euismod lectus, et lacinia justo libero non pede. Vivamus ac velit vel magna nonummy pretium.

1. Etiam ut augue
2. Aliquam erat volutpat

Sed justo: Nibh, placerat

	20XX	20XX
Sed dapibus dui quis lectus. Donec id sem. Integer sit amet 2% diam ac nibh consequat vestibulum. Sed eget augue malesuada quam adipiscing mattis	23,480	46,080
Sed lobortis, Maecenas scelerisque ullamcorper libero, Aliquam porta $180 leo imperdiet pede	15,000	-
Nunc congue. Fusce venenatis. Maecenas tincidunt, ipsum in fringilla hendrerit, dolor metus eleifend neque, vel tincidunt mi nunc a purus	-	45,000
Fusce venenatis. Maecenas tincidunt, ipsum in fringilla $1,200 hendrerit, dolor metus eleifend neque, vel tincidunt mi nunc a purus	33,301	43,782
Pellentesque	141,781	134,862

DONEC PULVINAR NONUMMY ERAT

Etiam porttitor. Ut venenatis, velit a accumsan interdum, odio metus mollis mauris, non pharetra augue arcu eu felis. Ut eget felis. Mauris leo nulla, sodales et, pharetra quis, fermentum nec, diam.

7.19.2. Meta-pattern(s) employed

Hierarchy

7.19.3. Description

The *Prose* business use case shows how information can be disclosed if the ordering of the information matters and if rather than disclosing individual components of information, an entire set of information can be articulated as one Fact Value. This use case is similar to the *Escaped XHTML* and *Text Block* use cases.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.19.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- Escaped XHTML is used to disclose such prose (rather than normal XHTML) because XBRL items must not contain mark up. To overcome this constraint, the mark up characters are escaped.
- Conversion from escaped XHTML to normal XHTML is a well understood process.
- Note that a specific data type of escaped XHTML is used, rather than string, in order to identify the escaped XHTML and enforce validation.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.20. BUC20 - General Comment

The *General Comment* business use case shows how to include a comment (implemented as an XBRL footnote) which includes additional information about a piece of information or pieces of information which are reported.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC20-GeneralComment/GeneralComment_Landing.html

7.20.1. Visual Example

Sample Company
For Period Ending December 31,
(thousands of dollars, except number of employees)

	2010	2009	2008	2007	2006
Sales, Net	1,500	1,400	1,300	1,200	1,100
Income (Loss) from Continuing Operations	500	400	300	200	100
Net Income (Loss) (a) (c)	51	41	31	21	11
Cash Flow Provided by (used in) Operating Activities, Net	5,000	4,000	3,000	2,000	1,000
Capital Additions	1,000	650	550	450	350
Average Number of Employees (b) (c)	300	290	280	270	260

COMMENTS:

(a) XBRL Footnote: This is an XBRL footnote, there is no 'categorization' as to what this is for. This indicates that the report is trying to tell you something about the Fact 'pattern:NetIncomeLoss' for a specific context.
(b) XBRL Footnote: This is another XBRL footnote, again, trying to tell you something about the average number of employees.
(c) BRM Comment: This comment is specifically identified as a 'BRM:GeneralComment', rather than an XBRL Footnote. Further, this BRM:GeneralComment hooks two reported Facts together.

7.20.2. Meta-pattern(s) employed

Any, example uses Hierarchy

7.20.3. Description

The *General Comment* business use case shows how a comment of any sort can be associated with any Fact Value being reported. This is achieved using an XBRL footnote.

7.20.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- A specific role and arcrole are used to identify the XBRL footnotes which are of the category general comment.
- See the Reclassification and Reason Not Reported business use cases which show other categories of XBRL footnotes.
- Note that XBRL footnotes can be used to associate one or more Facts to one or more other Facts, effectively expressing a set of related Facts.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.21. BUC21 - Pivot Table

The *Pivot Table* business use case shows how to model information which would commonly be used within an Excel pivot table.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC21-PivotTable/PivotTable_Landing.html

7.21.1. Visual Example

Sample Company
For Period Ending December 31,
(thousands of dollars)

	2010	2009	2008
Sales, all Business Segments, all Geographic Areas	32,038	35,805	32,465
Breakdown by Business Segment:			
Pharmaceuticals	20,181	18,150	15,275
Generics	2,433	1,973	1,823
Consumer Health	6,675	6,514	5,752
Other Segments	2,749	9,168	9,615
Breakdown by Geographic Area:			
North America	10,214	12,649	10,137
Europe	11,901	10,374	10,396
Asia	5,639	4,371	3,210
Other regions	4,284	8,411	8,722

7.21.2. Meta-pattern(s) employed

Any, example uses Hierarchy

7.21.3. Description

The *Pivot Table* business use case shows information which would commonly populate an electronic spreadsheet pivot table. In this case, although there are 27 Fact Values, only one concept is utilized, "Sales", and ten Members are used, Business Segment and Geographic Area, which break the sales information down into additional detail.

7.21.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- In a spreadsheet pivot table totals are generally not provided, rather the pivot table computes the totals as needed. However, in this example the totals are provided.
- Alternatively, this information could have been modelled as all concepts, rather than use dimensions. That approach would make using the information in a pivot table more difficult.
- Notice that there are three sections of this report: totals, a business segment breakdown, and a geographic area breakdown. Each of these is articulated in different Fact Groups (hypercube) in order to be clear about what information should be reported. Alternatively, one single Fact Group could have been used; however, it would be less clear that two breakdowns were required.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.22. BUC22 - Reason Not Reported

The *Reason Not Reported* business use case models how to model information which is required to be reported, but for some reason the information is not available, unknown, or for some other reason cannot be determined.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC22-ReasonNotReported/ReasonNotReported_Landing.html

7.22.1. Visual Example

Sample Company
For Period Ending December 31,
(thousands of dollars, except number of employees)

	2010	2009	2008	2007	2006
Sales, Net	1,500	1,400	1,300	1,200	1,100
Income (Loss) from Continuing Operations	500	400	300	200	100
Net Income (Loss)	51	41	31	21	11
Cash Flow Provided by (used in) Operating Activities, Net	5,000	4,000	3,000	2,000	1,000
Capital Additions	1,000	650	550	450	350
Average Number of Employees (*****)	300	290	280	270	*****

(*****) BRM Reason Not Reported: This information unavailable and therefore has not been reported.

7.22.2. Meta-pattern(s) employed

Any, example uses Hierarchy

7.22.3. Description

The Reason Not Reported business use case shows how sometimes information for a Fact might not be reportable. This is different than (a) actually reporting a value such as zero or (b) not providing the Fact in the XBRL instance at all. Rather, here a NIL value is reported. There could be a variety of reasons as to why a NIL value was reported such as the information is unknown, the information is unavailable, the information is required to be reported by it is not applicable, or some other reason. An XBRL footnote with a specific role and arcrole is used to articulate the specific reason a NIL value was reported.

7.22.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- Someone counted 14 different reasons why a Fact might be reported as NIL. (Regretfully, I did not get that list of the 14 reasons.)
- Categorizing XBRL footnotes into specific categories of comment are helpful in identifying specific types of XBRL footnotes.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.23. BUC23 - Simple Roll Forward Using Measure

The *Simple Roll Forward Using Measure* business use case is a variation of the *Simple Roll Forward* which models aspects of the roll forward using Members rather than Concepts. This is simply a matter of preference or approach, this is not a unique business use case.

7.23.1. Visual Example

Sample Company
December 31,
(thousands of dollars)

	2010	2009
Roll Forward of Land		
Land, Beginning Balance	1,147	1,147
Additions	1,992	400
Disposals	-193	-200
Translation difference	2,401	-200
Land, Ending Balance	5,347	1,147

7.23.2. Meta-pattern(s) employed

Roll Forward, Roll up

7.23.3. Description

The *Simple Roll Forward using Measure* use case shows an alternative technical approach to modelling a *Simple Roll Forward*. The business case is identical. In this case Measures are utilized to express the components of the Roll Forward.

7.23.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- This use case shows an alternative technical solution to the same business use case of a *Simple Roll Forward*.
- Determining which technical approach to use is a domain choice which should consider the basket of pros and cons offered by each approach.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.24. BUC24 - Complex Roll Forward Using Measures

The *Complex Roll Forward Using Measure* business use case is a variation of the *Complex Roll Forward* which models aspects of the roll forward using Members rather than Concepts. This is simply a matter of preference or approach, this is not a unique business use case.

7.24.1. Visual Example

Sample Company
December 31,
(thousands of dollars)

	Land	Buildings, Net	Furniture and Fixtures, Net	Other Property, Plant, and Equipment, Net	Property, Plant, and Equipment, Net
Balance at December 31, 2008	1,000	1,000	1,000	1,000	4,000
Additions	1,000	1,000	1,000	1,000	4,000
Disposals	-1,000	-1,000	-1,000	-1,000	-4,000
Translation Difference	0	0	0	0	0
Other Increase (Decrease)	0	0	0	0	0
Balance at December 31, 2009	1,000	1,000	1,000	1,000	4,000
Additions	1,000	1,000	1,000	1,000	4,000
Disposals	-1,000	-1,000	-1,000	-1,000	-4,000
Translation Difference	0	0	0	0	0
Other Increase (Decrease)	0	0	0	0	0
Balance at December 31, 2010	1,000	1,000	1,000	1,000	4,000

7.24.2. Meta-pattern(s) employed

Roll Forward, Roll up

7.24.3. Description

The *Complex Roll Forward using Measures* use case shows an alternative technical approach to modelling a *Complex Roll Forward*. The *Complex Roll Forward Using Measures* business use case builds on the Simple *Roll Forward Using Measures*. It simply adds more *Roll Forward* modelling them leveraging Measures. Contrast this use case to the *Simple Roll Forward* and *Complex Roll Forward*.

7.24.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- This is similar to the Classes business use case, showing a more complex example of using Measures to model information rather than concepts.
- Determining which technical approach to use is a domain choice which should consider the basket of pros and cons offered by each approach.

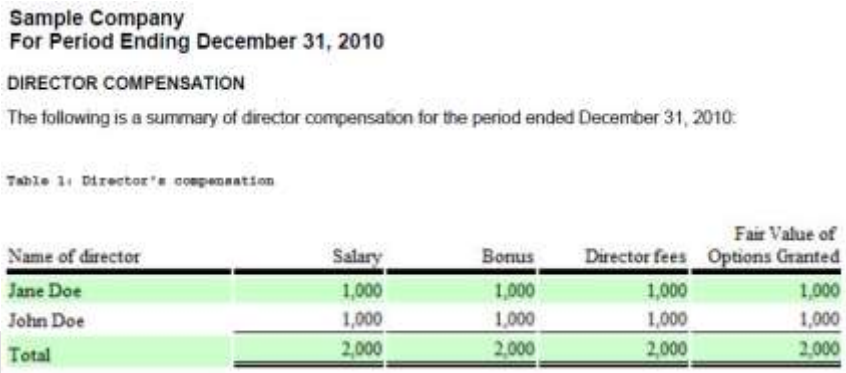
This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.25. BUC25 - Escaped XHTML

The *Escaped XHTML* business use case models how one can make use of HTML (hypertext mark up language, the format which Web browsers use) to achieve pixel perfect renderings of information which has complex information structures.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC25-EscapedXHTML/EscapedXHTML_Landing.html

7.25.1. Visual Example



Sample Company
For Period Ending December 31, 2010

DIRECTOR COMPENSATION

The following is a summary of director compensation for the period ended December 31, 2010:

Table 1: Director's compensation

Name of director	Salary	Bonus	Director fees	Fair Value of Options Granted
Jane Doe	1,000	1,000	1,000	1,000
John Doe	1,000	1,000	1,000	1,000
Total	2,000	2,000	2,000	2,000

7.25.2. Meta-pattern(s) employed

Hierarchy

7.25.3. Description

The *Escaped XHTML* business use case is basically the same as the *Prose* business use case. Both show how complex sets of information can be communicated to users of the information. Less detail is provided, but the use case shows how to get users to an information set, even though a computer application will not be able to parse the details. This is very similar to the what the SEC calls a "text block".

7.25.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- While a business user cannot parse the details, this type of an approach can be useful in modelling certain detailed information.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.26. BUC26 - Using JSON

The *JSON* business use case models how to articulate data primarily for the purpose of exchanging information. JSON (pronounced Jayson) is an approach to formatting data. Think of CSV (comma separated values).

http://www.xbrlsite.com/Patterns/2010-08-01/BUC26-UsingJSON/UsingJSON_Landing.html

7.26.1. Visual Example


```
{"DirectorCompensation":
   [
      {
         "DirectorName":"Jane Doe",
         "Salary":"1,000",
         "Bonus":"1,000",
         "DirectorFees":"1,000",
         "FairValueOfOptionsGranted":"1,000"
      },
      {
         "DirectorName":"John Doe",
         "Salary":"1,000",
         "Bonus":"1,000",
         "DirectorFees":"1,000",
         "FairValueOfOptionsGranted":"1,000"
      },
      {
         "DirectorName":"All Directors",
         "Salary":"2,000",
         "Bonus":"2,000",
         "DirectorFees":"2,000",
         "FairValueOfOptionsGranted":"2,000"
      }
   ]
}
```


7.26.2. Meta-pattern(s) employed

Hierarchy

7.26.3. Description

JSON (Java Script Object Notation, see http://www.json.org) is a data format which is similar to CSV but more powerful because it can express a hierarchy. JSON can be useful in exchanging information, this is how such information can be modelled using XBRL. CSV or other formats can be used in a similar manner.

7.26.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- The *Using JSON* business use case is similar to the *Text Block*, *Prose*, *Escaped XHTML* use cases in that a set of information is modelled as one concept and in an XBRL instance, that one Fact holds the complete set of information.
- This is one approach to modelling detailed information which supports some aggregated value.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.27. BUC27 – Flow

The *Flow* business use case models how to articulate the sequence or ordering of information within a business report.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC27-Flow/Flow_Landing.html

7.27.1. Visual Example

Sample Company
For Period Ending December 31,
(thousands of dollars)

	2010	2009	2008
Sales, all Business Segments, all Geographic Areas	32,038	35,805	32,465
Breakdown by Business Segment:			
Pharmaceuticals	20,181	18,150	15,275
Generics	2,433	1,973	1,823
Consumer Health	6,675	6,514	5,752
Other Segments	2,749	9,168	9,615
Breakdown by Geographic Area:			
North America	10,214	12,649	10,137
Europe	11,901	10,374	10,396
Asia	5,639	4,371	3,210
Other regions	4,284	8,411	8,722

7.27.2. Meta-pattern(s) employed

Any, example uses Hierarchy

7.27.3. Description

The Flow business use case shows that business reports have an ordering or sequence and how to model that sequence within an XBRL taxonomy by creating what amounts to a hierarchy of Fact Groups (or hypercubes).

7.27.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- How to add a specific sequence or ordering to a set of Fact Groups.
- Extended links cannot express an ordering or sequence. This is overcome by adding numbers or something which can be used to sort a set of extended links to provide ordering.
- Extended links cannot express a hierarchy of Fact Groups, using the Flow approach can.
- Contrast this use case with the *Pivot Table* use case which does not provide the flow information, but everything else is the same.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.28. BUC28 - Other Relations

The *Other Relations* business use case models how to articulate information which has other types of relations or very complex computations.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC28-OtherRelations/OtherRelations_Landing.html

7.28.1. Visual Example

Sample Company
For Period Ended December 31,

	2010	2009
OTHER INFORMATION		
Earnings Per Share Components		
Net Income (Loss)	10,000,000	20,000,000
Weighted Average Common Shares	100,000,000	100,000,000
Earnings Per Share	0.10	0.20

7.28.2. Meta-pattern(s) employed

Hierarchy, Other Relations

7.28.3. Description

The *Other Relations* shows an example of a computation which cannot be articulated using XBRL calculations and how to model that type of information. Basically any computation can be modelled as a Hierarchy meta pattern, the computations being explained by business rules which are provided with the XBRL taxonomy.

7.28.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- Any information can be modelled as a *Hierarchy*. If computations exist, add business rules to express the computations and you have an *Other Relations* meta pattern.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.29. BUC29 – Variance

The *Variance* business use case models how to articulate different business reporting scenarios for the same reported concept.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC29-Variance/Variance_Landing.html

[CSH: I am seeing clues that this might not be a meta pattern.]

7.29.1. Visual Example

Sample Company
For Period Ending December 31, 2010

Concept	Actual	Budgeted	*Variance*
Sales	6,000	5,000	*1,000*
Cost of Goods Sold	4,000	3,000	*1,000*
Contribution Margin	1,000	2,000	*-1,000*
Distribution Costs	1,000	1,000	*0*

7.29.2. Meta-pattern(s) employed

Any, example uses Roll Up

7.29.3. Description

In this business use case information is reported for two different reporting scenarios (actual and budgeted). The variance between the two reporting scenarios is also reported.

7.29.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- The *Variance* use case shows how to report concepts for different reporting scenarios.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.30. BUC30 – Classes

The *Classes* business use case shows how information can be modelled as concepts or as the members of a dimension. Please note the Roll Up business use case.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC30-Classes/Classes_Landing.html

7.30.1. Visual Example

Sample Company
December 31,
(thousands of dollars)

	2010	2009
ASSETS		
Property, Plant, and Equipment, Net		
Land	5,347	1,147
Buildings, Net	244,508	366,375
Furniture and Fixtures, Net	34,457	34,457
Computer Equipment, Net	4,169	5,313
Other Property, Plant, and Equipment, Net	6,702	6,149
Property, Plant and Equipment, Net, Total	295,183	413,441

7.30.2. Meta-pattern(s) employed

Any, example uses Hierarchy

7.30.3. Description

This business use case shows an alternative approach to modelling the *Simple Roll Up* business use case. Be sure to look at that use case as you model this business use case.

7.30.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- The *Classes* business use cases points out another way to add information to an XBRL taxonomy. Contrast the approach used in this use case with the *Simple Roll Up* use case to see two approaches to adding taxonomy information: as a concept or as a dimension of a concept.
- Choosing whether to model information "as a concept" or "as a dimension of a concept" should be done consistently with some clear strategy being communicated to taxonomy users.
- Determining which technical approach to use is a domain choice which should consider the basket of pros and cons offered by each approach.

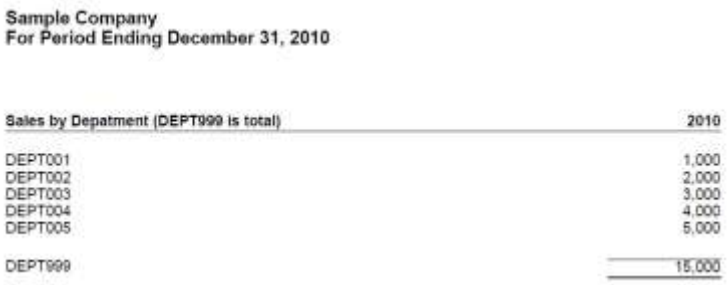
This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.31. BUC31 - Add Members Without Extension

The *Add Members Without Extension* business use case shows how to allow users to add information to an XBRL taxonomy, but without physically creating an XBRL extension taxonomy.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC31-AddMembersWithoutExtension/AddMembersWithoutExtension_Landing.html

7.31.1. Visual Example



Sample Company
For Period Ending December 31, 2010

Sales by Depatment (DEPT999 is total)	2010
DEPT001	1,000
DEPT002	2,000
DEPT003	3,000
DEPT004	4,000
DEPT005	5,000
DEPT999	15,000

7.31.2. Meta-pattern(s) employed

Any, example uses Hierarchy

7.31.3. Description

In some cases it is desirable to not require the creator of an XBRL instance to create an XBRL extension taxonomy. This business use cases shows how this can be achieved.

7.31.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- The *Add Members Without Extension* shows how to use a typed Member (also called an implied member) to eliminate the need to create an XBRL extension taxonomy but to still enable certain types of extension.
- Realize that this approach is not allowed by the US GAAP taxonomy or SEC XBRL filings.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.32. Reserved

Not used at this time.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.33. Reserved

Not used at this time.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.34. BUC34 - Grouped Report

The *Grouped Report* business use case is really nothing new, rather it shows that some information can contain a large number of dimensions.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC35-GroupedReport/GroupedReport_Landing.html

7.34.1. Visual Example

Sample Company
For Period Ending December 31, 2010

Investments

Shares	Description	Moody's Rating	S & P Rating	Value
LONG-TERM INVESTMENTS				
Australia				
AUD				
Government				
	Commonwealth of Australia			
8,450	7.50%, 7/15/05	Aaa	AAA	6,201,368
5,000	10.00%, 2/15/06	Aaa	AAA	3,684,856
5,500	6.75%, 11/15/06	Aaa	AAA	4,033,259
16,500	10.00%, 10/15/07	-	AAA	13,491,060
57,000	8.75%, 8/15/08(b)	Aaa	AAA	45,564,846
183,000	7.50%, 9/15/09(b)	Aaa	AAA	141,196,070
85,000	5.75%, 6/15/11	Aaa	AAA	60,270,977
154,000	6.50%, 5/15/13(b)	Aaa	-	114,827,421
28,000	9.25%, 4/15/15	Aaa	-	20,606,308
			Total Australian Government	410,176,285
Quasi/Semi-Government				
	Australia Postal Corporation			
22,000	6.00%, 3/25/09	-	AAA	15,576,319
	Commonwealth Bank of Australia			

7.34.2. Meta-pattern(s) employed

Any, example uses Hierarchy

7.34.3. Description

The *Grouped Report* business use cases shows that additional information is commonly just an additional dimension or dimensions which should be added to a set of information.

7.34.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- The *Grouped Report* business use case simply shows a Fact Group which has a larger number of Measures.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.35. BUC35 – Adjustment

The *Adjustment* business use case shows how to model an adjustment to a prior period financial statement for a change in accounting policy or correction of an error as defined by financial reporting standards. This same approach can be used for making adjustments to other beginning balances not related to financial reporting.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC34-Adjustment/Adjustment_Landing.html

7.35.1. Visual Example

Sample Company
December 31,
(thousands of dollars)

	2010	2009
Changes in Equity		
Prior Period Adjustment		
Retained Earnings (Accumulated Losses), Originally Stated 2009	4,000	
Change in Accounting Policy	3,000	
Correction of an Error	-1,000	
Retained Earnings (Accumulated Losses), Restated 2009 Beginning Balance	6,000	
Changes in Equity		
Retained Earnings (Accumulated Losses), Beginning Balance	6,000	0
Net Income (Loss)	7,000	5,000
Dividends	-1,000	-1,000
Retained Earnings (Accumulated Losses), Ending Balance	12,000	4,000

7.35.2. Meta-pattern(s) employed

Adjustment, Roll Forward, Roll Up

7.35.3. Description

The *Adjustment* business use case shows how to model an accounting prior period adjustment due to the correction of an error or change in accounting policy which results in a restatement of retained earnings. See the *Restatement business* use case which adds a few additional pieces to this modelling puzzle.

7.35.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- An *Adjustment* reconciles an two balances at the same point in time to two different report dates.

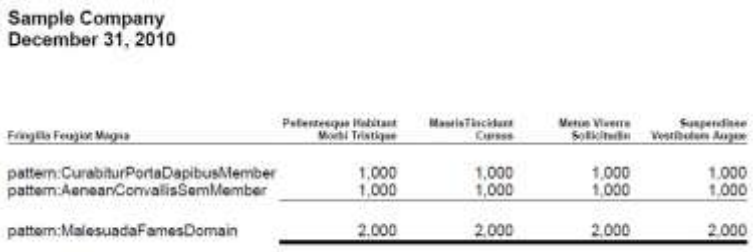
This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

7.36. BUC99 - Non Financial Information

The *Non Financial Information* business use case is really nothing new, rather it makes the point that the business use cases cover not just financial information, but rather any information: financial or non financial.

http://www.xbrlsite.com/Patterns/2010-08-01/BUC99-NonFinancialInformation/NonFinancialInformation_Landing.html

7.36.1. Visual Example



Sample Company
December 31, 2010

Fringilla Feugiat Magna	Pellentesque Habitant Morbi Tristique	Mauris Tincidunt Cursus	Metus Viverra Sollicitudin	Suspendisse Vestibulum Augue
pattern:CurabiturPortaDapibusMember	1,000	1,000	1,000	1,000
pattern:AeneanConvallisSemMember	1,000	1,000	1,000	1,000
pattern:MalesuadaFamesDomain	2,000	2,000	2,000	2,000

7.36.2. Meta-pattern(s) employed

Any, example uses Hierarchy

7.36.3. Description

The *Non Financial Information* business use case is Simple Compound Fact business use case modelled with meaningless placeholder text. The point is to show that there is nothing special necessary to model non financial information in XBRL. Any non financial use case can be modelled as the financial reporting examples shown. Information is simply text and numbers; whether it be financial or non financial is not a consideration really.

7.36.4. Important characteristics and dynamics

The following is a summary of the important characteristics and dynamics of this business case which should be considered:

- This use case shows that there is no difference between financial and non-financial information. Both are numbers and text used within a specific business domain.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

8. Basic Example

The *Basic Example* takes the meta patterns, puts them all into one XBRL taxonomy and XBRL instance, and begins to help determine how the meta patterns interrelate with one another. In addition, this example shows what amounts to a small example of a business report expressed using XBRL.

Don't be deceived by its apparent simplicity. The Basic Example is small in terms of its volume, but it contains 98% of the complexity which you would ever run across within XBRL.

Information relating to the *Basic Example* is found here on the Web:

http://www.xbrlsite.com/Examples/BasicExample/2010-08-01/Matrix.html

8.1. Overview

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

9. Comprehensive Example

The *Comprehensive Example* takes the complete set of business use cases, puts them all into one XBRL taxonomy and XBRL instance, and shows how one part of an XBRL taxonomy and XBRL instance interrelates with other parts in one comprehensive set.

Again, don't be deceived by its apparent simplicity of this example. It would be rare for a real XBRL instance to contain all that this example contains. While it might not look like a real financial report, the example looks enough like a real financial report to help grasp the true issues of expressing information using XBRL but small enough not to be overwhelming.

So, this example has the simple things and the complex issues you would ever run up against while modeling a real financial statement using XBRL all articulated within one small example compared to the size of a real XBRL taxonomy and XBRL instance. All the use cases that I am aware of are covered by this example. This is a marvelous learning tool. It is an extremely useful testing tool. It is a valuable prototype to show how to get XBRL to do the things which you will find that you need XBRL to do within your system.

The example strives to walk the tightrope and strike the appropriate balance between easy to understand and so overly complex that you begin to not see the forest for the trees. With this example you are shown both the forest and the trees, so to speak.

Information relating to the *Comprehensive Example* is found here on the Web:

http://www.xbrlsite.com/Examples/ComprehensiveExample/2010-08-01/Matrix.html

9.1. Overview

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

10. Comparison Example

The *Comparison Example* takes the Comprehensive Example, duplicates it into three XBRL instances and XBRL taxonomies, and allows one to look at the characteristics of performing comparisons between three XBRL instances.

The following are three very common ways business information is consumed:

1. **Using a single information set**: For example, using one financial report.
2. **Comparing across periods**: For example, comparing your financial report over a period of time.
3. **Comparing across entities**: For example, comparing three entities at one point in time or for a period of time.

This example provides XBRL instances and supporting XBRL taxonomies for three separate companies:

- ***ABC Company***: this is the Comprehensive Example
- ***XYZ Company***: this is a copy of the Comprehensive Example
- ***QQQ Company***: this is another copy of the Comprehensive Example

Each of these examples has its own company XBRL taxonomy which extends the same GAAP XBRL taxonomy. Everything follows the Business Reporting Logical Model. Business rules support 100% of the computations within the XBRL instances.

This example is not proposing that a GAAP taxonomy should be created in certain way or how financial reporting should be done in XBRL. What it is showing is three examples which work as I expect them to work. Don't like how something is articulated in XBRL? No problem, change it to something else that works as good or better than what is shown in the example.

The Comparison Example can be found here on the Web:

http://www.xbrlsite.com/Examples/Comparison/2010-08-01/matrix.html

There is another aspect of using XBRL for business reporting which this Comparison Example brings to light: the difference in comparability relating to where the meta data is defined within a set of XBRL taxonomies. Consider the levels in the sets (called a DTS or discoverable taxonomy set in XBRL lingo) used in this example:

- **Company taxonomy**: Defining concepts and relations at the company level provides the least comparability, but provides the most flexibility because the company can define anything it wants. Imagine if every company created individual taxonomies, each company taxonomy using different concepts. That provides an idea of what it means to define concepts at this level. This level really should be about communicating what makes a company unique.
- **GAAP taxonomy**: Defining concepts and relations at the GAAP level provides improved comparability because different companies share the concepts and relations of some GAAP taxonomy.
- **FRLM (Financial Reporting Logical Model) taxonomy**: Defining concepts and relations at this level enables comparability GAAP

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

taxonomies, should that be desired. For example, if the US GAAP and IFRS taxonomies shared the same FRLM infrastructure, using financial information between those two sets of GAAP would be easier.

- **BRLM (Business Reporting Logical Model) taxonomy**: Defining concepts and relations at the BRLM level enables different business domains to interoperate. The advantage of this level is that software could interoperate at the BRLM level rather than the XBRL level, making the software easier to use. Further, that software would work for any XBRL taxonomy or XBRL instance which leverages the BRLM. The software would still be XBRL compliant, i.e. the BRLM is 100% XBRL compliant.
- **XBRL**: Defining concepts and relations at the XBRL level enables the most comparability, but the least flexibility. It is not that this would ever happen, in fact this is what XBRL was trying to avoid. XBRL itself is not a language, rather it is a meta language – a language for developing languages. Basically, if everything were defined at this level it would serve one business domain and would basically be a form. Not creating any levels above XBRL means that you must work with XBRL itself, which is a technical syntax.

Consider these different levels when you architect your XBRL taxonomy. Striking the right balance by defining different taxonomy concepts and relations in the right taxonomy level is critical to achieving what a business domain is trying to get from XBRL.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

11. Overcoming Common Mistakes in Using XBRL to Model Business Information

Today, creating appropriate XBRL taxonomies and related XBRL instances can be more challenging that it really needs to be because software interfaces implement XBRL at the XBRL syntax level. That means that business users trying to make use of XBRL need to know more about XBRL.

This will not always be the case. In the future, software applications will burry XBRL deeply within business reporting tools, exposing XBRL functionality using some business reporting logical model. The logical model might be a global standard or it might be proprietary, but there will certainly be some logical model because business users simply will not make use of XBRL for long without easier to use software applications.

In the interim until that software exists, business users can struggle through the process using whatever tools they can lay their hands on and validate the XBRL output using other validation tools to ensure you have dealt with each of the issues stated below appropriately. Eventually, this validation software will make its way into software applications which better serve the needs of business users.

For now, here is a list of common mistakes other have made in using XBRL to model business information and how to avoid or overcome these issues.

11.1. Lack of clarity of extended link and hypercube semantics

Many times those creating and extending XBRL taxonomies are unclear of the business meaning of an XBRL Network or an XBRL Dimensions hypercube. Further, the relation between a Network and hypercube is typically unclear. As such, XBRL taxonomy users are not clear when to use a Network or hypercube, or where.

An example of this is the US GAAP taxonomy. There are no real rules articulated in the US GAAP Taxonomy as to exactly when you need to use an extended link and where, when you need to use a hypercube and where.

So how do you overcome the lack of business semantics of Networks and hypercubes? Stated another way, what maps to the Business Reporting Logical Model *Fact Group*? A Network? A hypercube? Both?

There are actually several answers to this question depending on constraints you need to deal with.

- **Best approach**: In my view, the best approach to addressing this potentially ambiguous areas is to demote Networks to syntax and use XBRL Dimensions as Fact Groups, make every hypercube and therefore Fact Group unique (a unique name), and explicitly use XBRL Dimensions for everything. Further, be sure all XBRL Dimensions hypercubes are closed.
- **Safest approach**: The safest approach is to have a one-to-one correlation between Networks and hypercubes. That means, ever Network has exactly one hypercube. Another reason this is good is that you can get the most predicable representation of your information in the SEC XBRL viewer if you are creating SEC XBRL filings.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

You cannot avoid Networks. Every relation in XBRL must exist within a Network. But what the Network means is up to the creator of the XBRL taxonomy. Making the Network mean nothing moves all the meaning to the hypercubes. The meaning of the hypercubes can be tied to the Fact Group of the Business Reporting Logical Model.

11.2. Inconsistency between presentation, calculation, and definition linkbases

There are three different relationship-type hierarchies of information which you can create in XBRL: presentation relations, calculation relations, and definition relations. If the three are consistent it is easy to interpret what that means. But what does it mean if inconsistencies exist between your presentation, calculation, and definition relations? Which one is correct?

For example, if you have a concept in your presentation relations but that concept does not exist but SHOULD exist in the calculation relations.

So how do you overcome these consistencies?

- **Make sure they are consistent:** The best way to overcome this issue is to make sure your presentation, calculation, and definition relations are consistent. This does not mean that they will look the same, rather it means that if you build your presentation information model in a certain way then you can predict what the calculations and definition relations look like.
- **Don't provide presentation relations:** Another way to help this is to simply not provide presentation relations. Many might think that odd, but it really makes a lot of sense. Most people don't realize that the US GAAP Taxonomy, when it is created, auto-generates the definition relations from the presentation relations in the taxonomy. You could do this the other way around also. You could generate the presentation and the calculation relations from the definition relations. The definition relations are easier to get right because every relation has an arcrole which must be explicitly declared.
- **Create a proprietary approach:** Another approach is to create a proprietary hierarchy or some other mechanism (i.e. it does not have to be using a tree) and then generate the presentation, calculation, and definition relations from your proprietary approach. This can make things a lot easier for the user because you are unconstrained by XBRL.

11.3. Inconsistent information models

Computers and inconsistency don't go together well. And while people are better than computers at dealing with inconsistency, consistency is generally a very good thing for people also.

The relations between concepts of an XBRL taxonomy are articulated in what amounts to a tree view in most software applications. For example, the US GAAP Taxonomy has [Table]s, [Roll Forward]s, [Axis], [Line Items], and other pieces of the XBRL taxonomy organized in a specific manner.

There are pieces of the US GAAP Taxonomy which are organized but not explicitly identified such as roll ups (calculations) and general hierarchies. There are two things which provide information about this organization which, which I refer to as the information model: the US GAAP Taxonomy Architecture document and the instantiation of the relations within the US GAAP Taxonomy itself. For example,

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

section 4.5 of the document discusses how to build [Table]s. Or, if you look within the US GAAP Taxonomy you begin to see patterns in its information model.

Now, when I am referring to the information model above, I am talking about the presentation relations only. It is impossible to model calculation models incorrectly from an XBRL perspective because there are XBRL validation rules which an XBRL processor must follow which checks for inconsistencies there. This is likewise true for the definition relations, it is very hard to make a technical modelling mistake. Now, you can create a business semantics problem by adding the wrong concepts to a relation or leaving a concept out of a relation. That is a different problem.

The point is, the problem with inconsistent information models tends to exist only within the presentation relations.

Something else to consider is this: what actually articulates the business semantics of the relations? For example, it is pretty easy to understand when something is a *Roll Up* because 100% of the time you will have calculation relations. Then, you follow the rules in the section above to maintain consistency between the presentation, calculation, and definition relations and your information model is clear. A *Hierarchy* is likewise clear, there are no calculation relations or XBRL Formulas. If you properly document the computations (see below), then it is also easy to detect a *Roll Forward*, a *Variance*, and *Adjustment*, or an *Other Relations*.

So, the point is this. If you can detect the information model from within the sets of relations, you don't need clues from the presentation relations, and the presentation relations are what cause most of the problems; why not just not provide presentation relations? See above, you can auto-generate presentation relations anyway. Also, there is precedent for this approach: the FINREP taxonomy does not make presentation relations available.

What to do?

- **Keep your information models consistent through validation:** You can write a software routine which enforces consistency in your information model and reports inconsistencies so you can correct them. This works, that is what the US GAAP Taxonomy does to an extent, that is why the information models in the presentation linkbase are quite consistent.
- **Don't provide a presentation linkbase:** Do like FINREP, don't provide a set of presentation relations but rather auto-generate it from the definition relations. That will not work if you don't use definition relations for every relation, but I suggest that you do use definition relations for everything, see above.

11.4. Unclear extension points and extensibility rules

Let's suppose that you follow one of the suggestions above and you create a perfectly consistent information model. You allow users of your taxonomy to extend your taxonomy. They take your perfectly consistent information model and add extensions inconsistent with your consistent information model.

That makes little sense, but that is precisely what the SEC is doing. Nothing requires SEC XBRL filers to create relations consistently with the US GAAP Taxonomy which is being extended.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

There are other issues relating to where an XBRL taxonomy should and should not be extended, but they are domain related and I will not address those issues here, those are different issues.

How do you solve this situation?

- **Require extenders to follow the base information model**: If you have an information model, require extension taxonomies to follow it.
- **Don't use presentation relations**: Like I mentioned above, the information model issues relate to the presentation relations. If you don't use presentation relations and follow the other suggestions above, then you won't encounter this situation.

11.5. Lack of clarity relating to whether to model information as a concept or a dimension of a concept

There are two approaches to adding information to an XBRL taxonomy: as a Concept or as a Member of a Measure of the hypercube to which that concept is associated (i.e. in XBRL Dimensions terminology, as a dimension of a concept).

For example, within the US GAAP Taxonomy: create a new concept or create a new [Member]. The US GAAP Taxonomy does both, in fact they do both for exactly the same information. Go to the US GAAP Taxonomy and look up the subclasses of Property, Plant and Equipment (Land, Buildings, Furniture, etc.). You will find the exact same information articulated as concepts and as [Members] within an [Axis] of those concepts. Why would you need both?

This issue of whether to model information as a concept or as a dimension of a concept is known by most who have built a lot of XBRL taxonomies. But those extending an XBRL taxonomy and reporting, such as SEC XBRL filers, have far less experience with this issue. As such, it can be challenging for a business user to figure out what to do in a situation like this where they have two options, particularly if they cannot look at the taxonomy for clues.

What to do?

- **Pick a strategy, articulate it, and be consistent**: The reality is that this question can never be answered definitively. There is no real answer. This question is very similar to the question, "Which is better, vanilla or chocolate ice cream?", except for when it is not. If one option or the other is the best with crystal clarity, and this is the case 80% of the time, then just follow some strategy and be consistent.
- **Always use the dimension of a concept approach**: FINREP doe this for the most part. This can be a good strategy.
- **Flip a coin**: Tails!

11.6. Information integrity issues of numeric values

A financial statement created on paper typically foots and cross casts; all the numbers, throughout the statement, all the time. If things don't add up, that is a very bad thing. Likewise, the computations within your XBRL instance need to foot and cross cast. Now, not all those collecting XBRL based information require you to submit XBRL Formulas to prove that they add up correctly, but that is a different issue. They still need to add up correctly.

For example, the SEC does not require or even allow XBRL Formulas to be submitted with SEC XBRL filings.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

XBRL calculations alone cannot achieve this result of proving 100% of all computations within an XBRL instance. Very common types of relations which XBRL calculations simply cannot prove are: Roll Forward relations and dimensional aggregations (i.e. all the Members of a Measure add up).

Not checking the numeric relations will lead to errors. Checking them manually is both time consuming and impossible to get correct manually. Every numeric value which has a relation with another numeric value should be checked in some manner.

- **Use XBRL Formulas**: One way to do this is using XBRL Formulas. But the SEC does not allow you to submit XBRL Formulas with your SEC XBRL filing. No problem, create the XBRL Formulas to verify your XBRL instance and don't submit it to the SEC. You will need these XBRL Formulas to also be sure your current period numbers tie to your prior period filing. Using a calculator and a human to do this is both too costly and insufficient and will lead to errors. If your information model is consistent, most of the XBRL Formulas can be auto-generated by software.
- **Use a proprietary approach**: Most of the computations in a financial report are really not that sophisticated or complex. Something like Excel formulas can be fine, if you are creating your XBRL using Excel. Other proprietary approaches can be created.

Using either XBRL Formulas or a proprietary approach can still lead to errors if different assumptions are made with regard to the formulas. The only way around that is if the base taxonomy creator to publishes formulas. That will create consistency both within an XBRL instance and across XBRL instances.

DRAFT

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

12. Top XBRL Tips (Technical)

The following is a summary of the top 10 XBRL taxonomy and XBRL instance creation tips which will help you create quality systems which make use of XBRL, helping a business domain achieve what they are striving to achieve.

12.1. Create a clear, unambiguous, formally documented information model.

Create a clear, unambiguous, formally documented information model. One of the biggest problems XBRL taxonomies have is inconsistent information models. An information model is simply how the relations within a taxonomy are structured. This is of particular importance when extensibility is employed within your system. For example, the US GAAP Taxonomy creates structures such as [Table]s, [Roll Forward]s, and other such structures. They explain how these structures are to be created. You should do the same in order to be able to evaluate how your taxonomy is created and in order to explain how your taxonomy should be extended. Taxonomies are simply not random. Make yours clear, unambiguous, and formally document it so those extending your taxonomy can follow the rules.

12.2. Don't mix dimensional and non-dimensional models.

Don't mix dimensional and non-dimensional models; personally I prefer a dimensional model. If you use XBRL Dimensions, then every concept should be attached to a hypercube thus requiring the dimensions of the concept to be explicitly identified. Mixing a dimensional model and a non-dimensional model causes headaches which can be avoided by simply using one model or the other. Since business information is inherently dimensional anyway, I personally prefer a dimensional model, using XBRL Dimensions consistently throughout your XBRL taxonomy. Mixing models also make using XBRL Formula much trickier.

12.3. Make each hypercube unique.

Make each hypercube unique. There are advantages to making each hypercube in an XBRL taxonomy unique. Take a look at this taxonomy. Search for the line items which say "Statement [Table]". You can see what I am talking about more clearly by looking at this. What is the point of using the same hypercube for each set of dimensions and concepts? Why not use a different unique hypercube name for each hypercube? This has a number of benefits, including making the extended link as any form of semantics unnecessary. The FINREP taxonomy makes each hypercube unique.

12.4. Close all hypercubes.

Be sure to require that all hypercubes be closed. All hypercubes you create which have an "all" role should be closed (and all your hypercubes which have a "notAll" role should be open if you happen to use those). Leaving a hypercube open basically lets anything exist in the context. What is the point of that? Be explicit and close all your hypercubes.

12.5. Clearly differentiate Members and Concepts.

Always clearly differentiate dimension values and concepts. When creating an XBRL taxonomy you don't want users of the taxonomy to mix up what is a

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

dimension value (such as a domain or a member) and what is a concept which can be used to report a value. The US GAAP Taxonomy differentiates domains and members by appending "[Domain]" or "[Member]" to such dimension values and assigning those types of elements to a special type value of "domainItemType". You could also use the substitutionGroup to differentiate these two types of XML Schema elements. That way, users don't get confused.

12.6. Use either segment or scenario, there is no real reason to use both.

Use either segment or scenario, there is no real reason to use both. Eliminating unnecessary options makes things easier. There is no semantic difference between using the segment context element and the scenario context element. Besides, if different XBRL instance creators use different elements, comparability then becomes an issue. You can avoid both of these problems by simply using one or the other. Which is as easy as tossing a coin really. Using scenario seems to be the best, but the US GAAP Taxonomy suggests segment. You can pick.

12.7. Use XBRL Dimensions or use tuples, don't use both in the same XBRL taxonomy.

Tuples and XBRL Dimensions are redundant in that they are basically two syntaxes for doing what amounts to the same thing. Each has its pros and cons. Pick and use one or the other; personally I prefer XBRL Dimensions. The biggest problem with using both tuples and XBRL Dimensions is explaining when to use one and when to use the other. The primary reason I don't like tuples is because they significantly inhibit extensibility. Basically, tuples add back the XML content model with XBRL worked to remove. XBRL Dimensions can do everything that tuples can do, but tuples are not nearly as functional as XBRL Dimensions.

12.8. Use decimals or precision, don't allow both.

Precision and decimals are redundant, pick and use one or the other; personally I prefer decimals. The precision and decimals attribute on a fact value serves the same purpose. There is pretty much universal agreement that only one of these should have been created. Having both causes more work when working with XBRL instance information which contains both. FRTA suggests that decimals be used. So does the US GAAP Taxonomy. I agree and suggest using decimals because it is easier for business users to understand.

12.9. Avoid complex typed members unless you really need them.

Don't use complex typed dimensions unless you really need them. Complex typed members allow literally any XML you can think of as a possible value, except for XBRL itself. It is way too much to ask for a software application to implement something like this. Further, using it to compare to entities effectively can be quite challenging. You can achieve the same results by using a number of simple typed members, which are much easier to build an interface for and easier to make work. Complex typed members for dimension values are far more trouble than they are worth and should be avoided.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/

12.10. Be explicit, consistent and concise when expressing taxonomy information; less is more.

Don't be redundant in expressing taxonomy information. If you express things twice in two different ways, you create work in that you now have to make sure the two things you are expressing are in sync. For example, expressing information in a presentation linkbase and also in a definition linkbase causes such redundant information. The FINREP taxonomy figured this out and does not make a presentation linkbase available with its taxonomy. In the short term this can be a bit of a challenge to effectively do because most software applications rely on the presentation linkbase. Overtime and as software gets better, this will not be an issue. First, realize that you are creating redundant information. Second, if you can, you may want to consider not making this redundant information available in your XBRL taxonomy.

12.11. Consider ditching XBRL Calculations.

Give serious consideration to using XBRL Formula rather than XBRL calculations. XBRL Formula is several orders of magnitude more powerful that XBRL calculations. Also, XBRL calculations have their idiosyncrasies. More and more people are moving to XBRL Formula. You may want to give strong consideration to abandoning XBRL calculations and using XBRL Formula instead. XBRL calculations can be easier in certain situations. The tradeoffs should be understood and evaluated in making your decision.

12.12. Realize that XBRL instance contexts and XBRL Dimensions hypercubes constrain facts differently.

XBRL has two mechanisms for defining contextual information and those two ways work differently. The two ways are XBRL contexts and XBRL Dimensions hypercubes. Two specific pieces of an XBRL context, entity identifier and period, must exist on every XBRL Fact. They are unconstrained and not impacted by any context constrains defined by an XBRL Dimensions hypercube. Segment and scenario information not defined by XBRL Dimensions works this way also. XBRL Dimensions hypercubes is another way of constraining information, basically the dimensions or Measures associated with a Fact.

This work is licensed under a Creative Commons License.
http://creativecommons.org/licenses/by/3.0/