



A Brief Technical Review for XBRL

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Introduction

This paper gives a brief technical introduction to current financial reporting language: XBRL (eXtensible Business Reporting Language). Initially, we will explain what XBRL is in terms of usability and how XBRL was generally recognized around the world. Thereafter, this paper will elucidate what XBRL is by breaking it into three different technical terms: Taxonomy, Instance Document and Business Rules. Then, a few demonstrations of how XBRL is manipulated in software and in actual financial reporting practice are exposed. Last but not least, this file brought forward the discussion around the technical value of this business language, benefits of adopting it in our financial system and future prospective.

What is XBRL

XBRL is a standard to manipulate financial information (i.e. line items in financial report) into the computer. The differences between normal computer information exchange technology such as Microsoft Word, Adobe PDF and Microsoft Excel are significant. First of all, it gives/attach a code to each line item you report. Secondly, the code is unique in a specific financial region or world wide. Third, relationships are established between each code depending on the financial line item they present. Finally and more important of all, both the definition of the code and its relationship are very carefully designed by finance & computer experts, agreed by financial authorities and are going to force to be followed by financial information reporters. The standard of the code is called Taxonomy. The relationship between codes is called business rules. And the actually data financial information reporters (i.e. accountants) following these technique is call instance documents.

For example, in a typical financial statement such as:

	2007 £'000	2006 £'000
Land	3,235	2,654
Buildings	185,654	163,357
Furniture and Fixtures	28,568	31,986
Computer Equipment	6,231	4,344
Others	4,564	7,568
Total	228,252	209,909

An accountant may paste this type of information directly in a Word document or Excel file and send it to financial report end users (manager, government, public, etc). However, in a XBRL financial reporting, an accountant needs to do more work.

Firstly, we need to find the code for each of the financial data terms from the taxonomy. Here, normally we will find the code for 'Land' is 'ci_Land'. Then, we need to input the numerical data under these codes in a logical way. Afterward, we rearrange the code with data in a XBRL defined form into an instance document. Finally, before sending out, we need to double check if the data we input is correct by verifying the results from various calculations between our financial data are correct. For instance, the values of Land, Building, Furniture and Fixtures, Computer

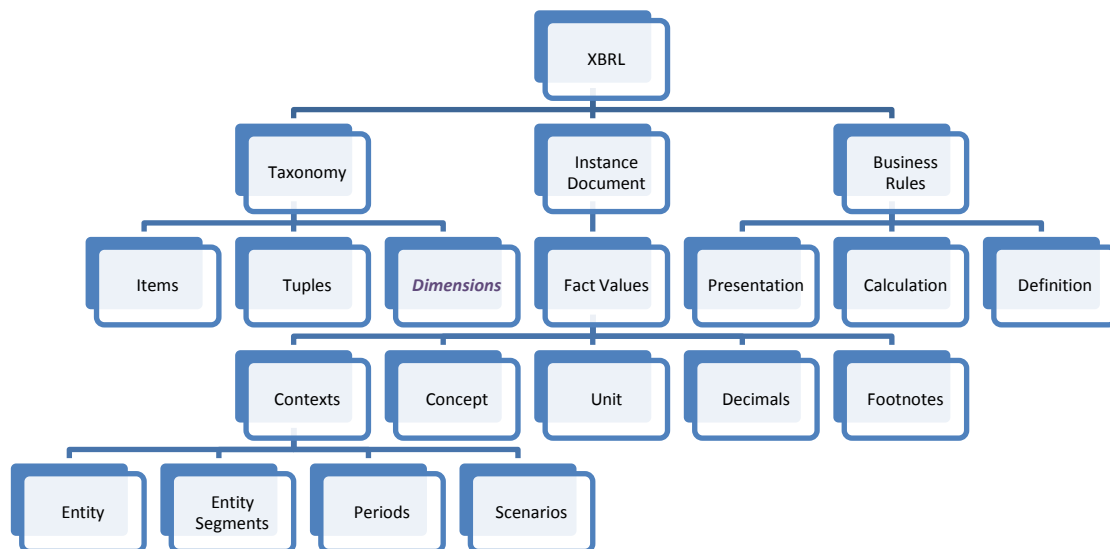
Equipment and Others add up together should equal to the value of Total. Actually, this kind of calculation relationship may already define in the Taxonomy between codes, which is called business rules. The name of this procedure is called instance documents validation. Although it looks a little difficult, software may help to avoid complex computer-language-writing-alike operation.

Why do we bother doing this? The answer may surprise you: for our own benefits and more importantly for the convenience of financial data users. The key part of our own benefit is the validation part. The validation tool software can almost tell exactly which data may be wrong, instead of previous we worked got headache to find out where is wrong in a long spread sheet report. Further more, after we find the mistake, we can easily correct the data and all other related calculation by one click in a XBRL intelligent software, instead of you do them one by one manually and got more headache but still hard to make them all right. On the other hand, for more various financial information users, there are a lot of advantages of have an XBRL financial report, which we will discuss in a later section of this paper.

Other definitions of XBRL are also widely available on the internet. By obsession, XBRL is the product of XBRL International (www.xbrl.org), a non-profit consortium of over 450 companies, organizations and government agencies. By technology type, XBRL is part of a family of XML language which is becoming a standard means for business to communicate over the Internet. By functionality, XBRL is going to be the common way of exchanging financial information between human via the computer, and analysis them with the computer. In general, XBRL is a new powerful evolutionary technology for our financial reporting system.

XBRL Technical Explanations

Now, let's sit down and have a look at what exactly XBRL is, by breaking the block into three pieces: Taxonomy, Instance Document and Business Rules. Look at the diagram below: *Graph 1.1*



Note: Here we define presentation and definition under the concept of Business rule is for consideration that they all do with the relation between taxonomy line items.

Taxonomy

An XBRL taxonomy defines the most regular financial reporting terms into a standard set of XML item. Then later on, financial data preparers can use it as dictionary that they have to refer to each time they input a financial data value. The taxonomy is the key point of XBRL. Without it, from instance document, business rules to the entire XBRL have no root to stand.

Taxonomy is consists of Item, Tuple and Dimension depending on individual characteristics of the financial data line item. Among which, the dimension is still on an infant stage of developing process. Some of dimension's feathers conflict with tuple. Therefore, definition and usage of dimension in XBRL need to be further discussed and formalized.

XBRL use XML Schema with added features to define these three concepts. The features that from original XML Schema are 'element name', 'id', 'type', 'substitutionGroup' and 'nillable'. The table below list their descriptions:

name	A required attribute. Unique for every XBRL concept. E.g. "PropertyPlantAndEquipment"
id	Another required attribute. Unique for every XBRL concept. This is used to further differentiate items. E.g. "ifrs-gp_PropertyPlantAndEquipment"
type	The data type of an item or concept. Available types in XBRL are: decimalItemType, floatItemType, doubleItemType, integerItemType, byteItemType, nonPositiveIntegerItemType, negativeIntegerItemType, intItemType, shortItemType, nonNegativeIntegerItemType, unsignedLongItemType, unsignedShortItemType, shareItemType, pureItemType, unsignedByteItemType, tokenItemType, languageItemType, positiveIntegerItemType, monetaryItemType, fractionItemType, stringItemType, booleanItemType, hexBinaryItemType, base64BinaryItemType, anyURIItemType, QNameItemType, durationItemType, dateTimeItemType, NOTATIONItemType, timeItemType, dateItemType, gYearMonthItemType, gMonthDayItemType, gDayItemType, gMonthItemType, normalizedStringItemType, NameItemType, NCNameItemType. This is also required.
substitutionGroup	Whether it's an xbrli:item or xbrli:tuple. Required. xbrli:dimension is still an critical term.
nillable	Nil feature of XML Schema. Normally it has a "true" value.
xbrli:periodType	Used on each taxonomy to identify whether the concept is "instant" (as at/as of) or "duration" (for the period ended/ending). Required.
xbrli:balance	Optional. Only used on monetary type concepts. Could assign value as "debit" or "credit".

After have in mind what XML and XBRL Schema like, we will introduce Item, Tuple and Dimension in XBRL taxonomy. Each concept is described with UBmatrix screenshot of UK GAAP Taxonomy, followed with a script of readable code.

An **item** is the most basic XBRL taxonomy element. It contains the actual data.

Prefix	Label /	Name	Data Type	Abstr...	Substitutio...	Balance	Period Type	Niltable	Flag	Date Last Changed
uk-gaap-pt	Land and buildings operating leases expirin...	LandBuildingsOperatingLea...	Monetary	False	xbri:item	Credit	Instant	True	False	2007-05-31T09:24:48
uk-gaap-pt	Land and buildings operating leases expirin...	LandBuildingsOperatingLea...	Monetary	False	xbri:item	Credit	Instant	True	False	2007-05-31T09:24:48
uk-gaap-pt	Land and buildings operating leases expirin...	LandBuildingsOperatingLea...	Monetary	False	xbri:item	Credit	Instant	True	False	2007-05-31T09:24:48
uk-gaap-pt	Land and buildings, freehold	LandBuildingsFreehold	Monetary	False	xbri:item	Debit	Instant	True	False	2007-05-31T09:24:48

The code for the first item highlighted in green is:

```
<element name= "LandBuildingsOperatingLeaseExpiringAfterFiveYears" id= "uk-gaap-
pt_PropertyPlantandEquipment" type= "xbri:monetaryItemType" substitutionGroup="xbri:item"
niltable="true" xbrli:balance="credit" xbrli:periodType="instant">
```

Don't worry too much about the code. They just list information about that item in a formal way enclosed within triangle brackets. This way, computer can understand.

Tuple contains combinations of items and sub tuples. If item is like a file in a computer, then tuple is like folders in your computer. They do not contain actually data, but they are as important as item, because it makes the relationship between items clear, by ways of grouping related items and differentiating different ones.

Prefix	Label /	Name	Data Type	Abstract	Substitutio...	Balance	Period Type	Niltable	Flag
uk-gaap-pt	Director or executive signing report	DirectorOrExecutiveSigningReport	Tuple		xbri:tuple			True	False
uk-gaap-pt	Director or executive's accrued lump sum p...	DirectorOrExecutivesAccruedLumpSumPensionEntitle...	Monetary	False	xbri:item		Duration	True	False
uk-gaap-pt	Director or executive's benefits	DirectorOrExecutivesBenefits	Monetary	False	xbri:item	Debit	Duration	True	False
uk-gaap-pt	Director or executive's benefits under long...	DirectorOrExecutivesBenefitsUnderLongTermIncentive...	Monetary	False	xbri:item	Debit	Duration	True	False
uk-gaap-pt	Director or executive's bonus	DirectorOrExecutivesBonus	Monetary	False	xbri:item	Debit	Duration	True	False
uk-gaap-pt	Director or executive's expense allowances	DirectorOrExecutivesExpenseAllowances	Monetary	False	xbri:item	Debit	Duration	True	False
uk-gaap-pt	Director or executive's fees	DirectorOrExecutivesFees	Monetary	False	xbri:item	Debit	Duration	True	False

The code for the first tuple is:

```
<element id= "ci_DirectorOrExecutiveSigningReport" name= "directorOrExecutiveSigningReport"
substitutionGroup= "xbri:tuple" niltable= "true">
  <complexType>
    </complexContent>
    <restriction base= "anyType">
      <sequence>
        <element ref= "ci:DirectorOrExecutivesName"/>
        <element ref= "ci:DirectorOrExecutivesPosition" />
      </sequence>
      <attribute name= "id" type+ "ID" use= "optional"/>
    </restriction>
  </complexType>
</element>

<element name= "DirectorOrExecutivesName" id= "ci_DirectorOrExecutivesName" type=
"xbri:stringItemType" substitutionGroup= "xbri:item" niltable= "true" xbrli:periodType=
"duration"/>
<element name= "DirectorOrExecutivesPosition" id="ci_DirectorOrExecutivesPosition" type=
"xbri:stringItemType" substitutionGroup= "xbri:item" niltable= "true" xbrli:periodType=
"duration"
/>
```

You shall have noticed a simple rule in xbrl/xml code writing now that we start with <definition> and end with </definition>. The computer read it in this way so that it can know when the command starts and when it stops, and in which scope. Also, if we used reference <element ref=../> in the middle of an element script, we have to define the reference item used before or after. Otherwise, the code may not work.

Dimension is slightly different from those two above or more complex, but is a combination of both item and tuple, with many similar feathers with Tuple. Below, we will introduce the idea and functionalities of this new XBRL element ignoring the code for simplicity.

Look at the cube on the right. Some times we need to investigate multiple feathered data front different aspect like we watch the cube from difference dimensions. For instance, when examining a sale report of an international company, we have the data been grouped by: year, geographical region, and business segment.



On paper and current Microsoft Excel tables, we can only display two “dimensions”. In addition, changing different dimensions to display the data can occur a large amount of extra work. Some presentation software may help improve the ease of displaying, such as Quantrix Modeler, but now with XBRL, the ways we manage dimensional data will be change from the essence. We will not go through details of XBRL dimensions here, as this XBRL concept is not mature yet. Still in the book *Financial Reporting Using XBRL* by Charles Hoffman, the father of XBRL disclosed the structure of an XBRL dimensions. See **Reference 2.2** Some examples:

- ✧ *A entity and the business segments and/or geographic segments of the entity,*
- ✧ *A comparison of the “actual”, “budgeted”, and the “variance” between the actual and budgeted figures*
- ✧ *A breakdown of sales and the breakdown of that class of sales by product, by price band, by region, or other special feathers*

As we can see XBRL dimensions can group XBRL items like tuples. Therefore, whether or not we should continue using tuples after applied dimensions are still being critically discussed. Hopefully, some answers and agreements will come out on the incoming XBRL Munich Conference this June.

Instance Document

The instance document contains actual financial reporting data and context information related with it. For example, the value of land in 2007 in table 1.1 is 3,235. This value in an instance document shall also contain the period 2007, the unit ‘000, and type of currency £.

Currently XBRL instance document is still an XML file format. The difference between XBRL instance document and normal XML document is that all financial reporting terms that used in XBRL in stance document are from XBRL taxonomy. In addition, XBRL instance documents can not be displayed by currently version of Microsoft Excel yet, but XBRL application software.

Examples of some actual instance documents can be downloaded at:

<http://www.sse.com.cn/sseportal/webapp/datapresent/SSEXBRLFileListAct>

This web link is a page of downloadable instance documents of companies that registered in Chinese Stock Exchange market from 2006. Screenshot of the first document on UBmatrix please see Reference 2.3

More specifically, detailed property of items shall be filled in an instance document. These properties are:

Context, describes the **entity**, **entity segment**, **period** and **scenario** a fact value is associated with. This is required. Among which, period is a date data type, describes the period which the fact value relates to (such as example here: “for the month ended May 31, 2007). Scenarios can be assigned as “actual”, “budgeted”, “pro forma”, “restricted”, “unrestricted” etc. It’s code is like XML we show above.

```
<context id="I-2007">

  <entity>
    <identifier scheme= http://www.DreamingWebsite.Com>SAMP</identifier>
    <segment>
      <segments:ReportingSegments><segments:Group /></segments:ReportingSegment>
    </segment>
  </entity>

  <period>
    <instant>2007-05-31</instant>
  </period>

  <scenario>
    <scenarios:ReportingScenario><scenarios:Actual /></scenarios:ReportingScenario>
  </scenario>

</context>
```

Notice again the <> and </> habit when writing XML or XBRL codes.

Units describes the unit of measurement that a reported fact value use. This property is optional. International currency codes are used. For example, British Pound is assigned as “GBP”, Chinese Yuan is “RMB”, US Dollars is “USD” and Euros is “EUR” etc. Its code is just one element short:

```
<unit id= "U-Monetary">
  <measure>iso4217:EUR</measure>
</unit>
```

Fact Values describe the actual numerical data that XBRL item has. In *Graph 1.1*, we put the concept Fact Values and the summary concept that contains Concept that used from Taxonomy, Context/ContextRef, Unit/UnitRef and Decimals and Footnotes. This time we show the code of a tuple fact values:

```
<uk-gaap-pt:Director>
  < uk-gaap-pt:Name contextRef= "I-2007">Felix</ uk-gaap-pt:name>
  < uk-gaap-pt:Salary contextRef= "I-2007" unitRef= "U-Monetary" decimals=
    "INF"> 2000 </ uk-gaap-pt:Director>
</uk-gaap-pt:Director>

<uk-gaap-pt:Director>
  < uk-gaap-pt:Name contextRef= "I-2007">Jane</ uk-gaap-pt:name>
  < uk-gaap-pt:Salary contextRef= "I-2007" unitRef= "U-Monetary" decimals=
```

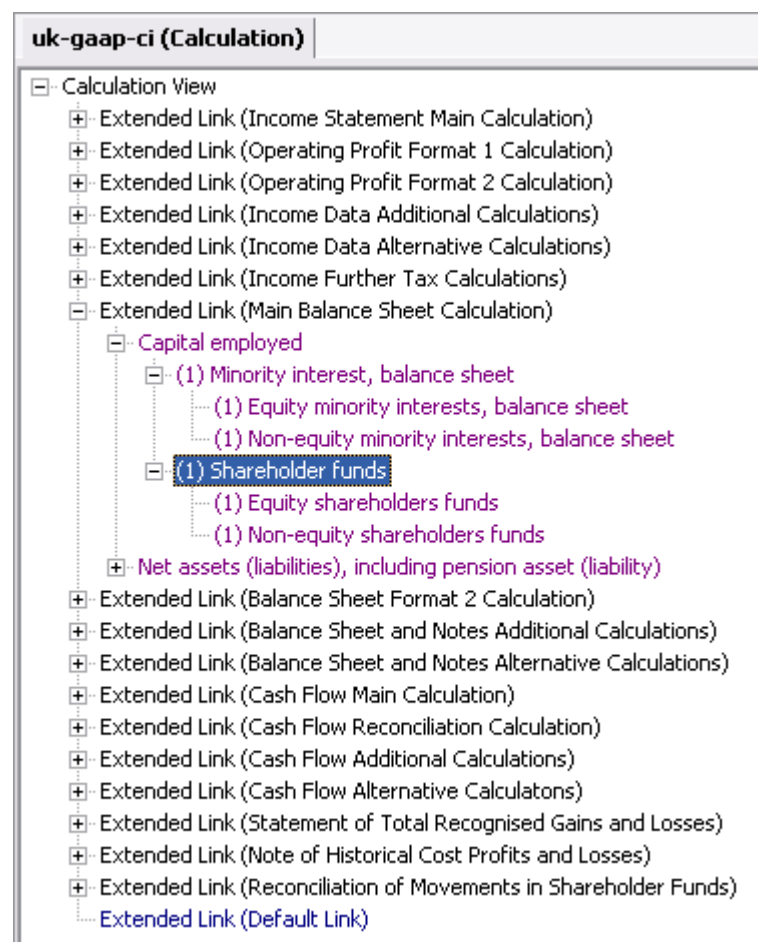
```
“INF”> 3000 </ uk-gaap-pt:Director>
</uk-gaap-pt:Director>
```

Mistakes are unavoidable in daily accounting and financial reports, so is the same when people input data into XBRL instance documents. However, now it is much easier for us to check whether or not there are mistakes in the instance documents or financial reports, where it is and how to accurate. That is enabled by the usage of business rules which we are going to introduce below.

Business Rules

Officially business rules only imply the rules of relationship between factual data in instance documents, which is a similar meaning of the Calculation. However, here we expand that definition and see business rules in XBRL as all elements that related with relationship and calculation among factual data in instance documents, which will add Presentation and Definition.

Calculation



Calculation defines the logical calculation relationship among factual data in the instance document. They are originally defined with taxonomy and terms in special business fields. For example, in a balance sheet, the total of debt shall equals to the total of credit in absolute value but with opposite sign. Another example is, some XBRL terms (normally with “total” in their name) are the aggregate term of a few sub terms, and this relationship shall be reflected by calculation as well. More complex relationship such as the calculation of periodical interest rate is also available. However, in

current develop status of XBRL, we mostly only use sum and a few multiply calculations. In XBRL software, we will normally see a(1) or (-1) in front of terms so that both people and computers know that the father term of items equals to the sum of the all terms on the lower lever.

Presentation

Presentation also has a tree shape. However the relationship between trunk and branches of these trees is merely for convenience of viewing. Upper tree collect all related item in the financial data with a “total” element as the last item of the presentation tree. There is no calculation signs in front of items, and upper items are normally abstract (does not contain real value). Positions of items are located similar with the structure of a normal financial statement. Current UK GAAP taxonomy’s Presentation links looks like below in UBmatrix interface:

uk-gaap-ci (Presentation)

- [-] Presentation View
 - [+] Extended Link (Directors' Report)
 - [+] Extended Link (Auditors' Report)
 - [-] Extended Link (Income Statement)
 - [-] **Income statement**
 - [+] Earnings (loss) per ordinary share
 - Retained profit (loss) for the period - transferred to (from) reserves
 - [+] Dividend payments
 - Profit (loss) for the period before dividend and appropriations
 - Other taxes not already shown
 - Minority interests, extraordinary activities
 - Extraordinary profit (loss) after taxation
 - [+] Minority interests
 - Profit (loss) on ordinary activities after tax
 - Tax on profit or loss on ordinary activities
 - Profit (loss) on ordinary activities before tax
 - [+] Finance income and payments
 - Profit (loss) on ordinary activities before finance charges and interest
 - [+] Exceptional items after operating profit
 - Operating profit (loss)
 - Operating profit: utilisation of prior year provisions related to discontinued operations
 - [+] Profit and Loss Format 1
 - [+] Profit and Loss Format 2
 - [+] Extended Link (Balance Sheet)
 - [+] Extended Link (Cash Flow Statement)
 - [+] Extended Link (Statement of Total Recognised Gains and Losses)
 - [+] Extended Link (Note of Historical Cost Profits and Losses)
 - [+] Extended Link (Reconciliation of Movements in Shareholder Funds)
 - [+] Extended Link (Notes and Detailed Disclosures)
 - Extended Link (Default Link)
 - [+] Extended Link (Entity information)
 - [+] Extended Link (Report information)
 - [+] Extended Link (General purpose information)
 - [+] Extended Link (List of countries)
 - [+] Extended Link (List of exchanges)
 - [+] Extended Link (List of currencies)
 - [+] Extended Link (List of languages)

uk-gaap-ci (Definition)

- [-] Definition View
 - Extended Link (Default Link)
 - [-] Extended Link (Dimension: Consolidation)
 - [-] Consolidated total
 - Total of group and joint-ventures
 - Group
 - Total subsidiaries / group undertakings
 - Total of joint-ventures and associates
 - Total joint-ventures
 - Total associates
 - [+] Extended Link (Dimension: Subsidiaries)
 - [+] Extended Link (Dimension: Joint-Ventures)
 - [+] Extended Link (Dimension: Associates)

Definition

The definition tree indicates the mechanism of the financial reporting items in our theory. For example, in our first example about property, plant and equipment, now we will differentiable

them with depreciable and non-depreciable two term. This help the users of XBRL understand financial theories better and therefore report and use financial information more efficiently. We only showed a part of the definition view of current UK GAAP taxonomy, just to demonstrate its differences between presentation and calculation.

There are other concepts in XBRL such as Linkbase Reference Roles, Label Roles and Reference Roles which normal user might see but will not have direct contact. Still we list possible values of these roles in a FRTA compliant taxonomy here. XBRL Arcroles can be: labelArc, referenceArc, presentationArc, definitionArc; Linkbase Reference Roles can be: calculationLinkbaseRef, definitionLinkbaseRef, labelLinkbaseRef, presentationLinkbaseRef, referenceLinkbaseRef; Reference Roles can be: reference, definitionRef, disclosureRef, mandatoryDisclosureRef and recommendedDisclosureRef; finally Label Roles can be: label, terseLabel, verboseLabel, positiveLabel, positiveTerseLabel, positiveVerboseLabel, negativeLabel, negativeVerboseLabel, zeroLabel, zeroTerseLabel, zeroVerboseLabel, totalLabel, periodStartLabel, periodEndLabel, documentation, definitionGuidance, disclosureGuidance, presentationGuidance, placementGuidance, measurementGuidance, commentaryGuidance, exampleGuidance. Each role above has <http://www.xbrl.org/2003/role> attached to the beginning of the role.

XBRL in Software Practice

The function of XBRL software is the utilize features of XBRL files. That includes: Viewing and Creating XBRL Taxonomy, View and Creating XBRL Instance Document, Validating XBRL Taxonomy and Instance Documents, and widely using XBRL instance document data to assist preparation and analysis of financial reports.

Although XBRL is still on an early stage, many software vendors already vie with each other to invest in XBRL software development. Online services are new feathers comparing with traditional financial reporting tools. A list of current software vendors can be found on XBRL.org website, which we list in the appendix.

Here we will introduce **UBmatrix**. The obvious reason is that Charles Hoffman is their director of industry solutions and there are many other inter relationship between UBmatrix and the development of XBRL. Using data we listed in table 1.1, in Microsoft Excel we simply type in as we did in Microsoft word:

	A	B	C	D
1				
2				
3			2007	2006
4			£'000	£'000
5		Land	3,235	2,654
6		Buildings	185,654	163,357
7		Furniture and Fixtures	28,568	31,986
8		Computer Equipment	6,231	4,344
9		Others	4,564	7,568
10		Total	228,252	209,909
11				

However, in XBRL, we have to follow steps below:

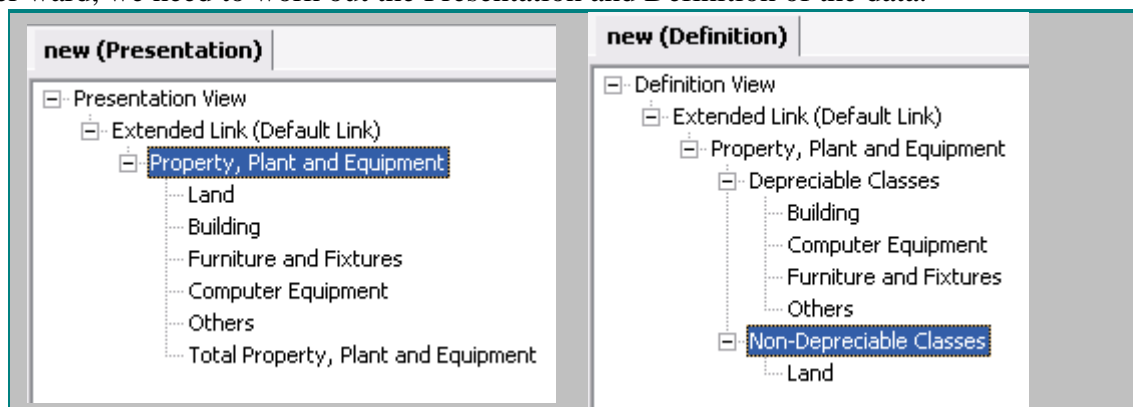
First of all, we need to examine the financial data in an ‘XBRL way’. From above, we can see there are six Concepts to be expressed; each has two values in different Periods; and the Unit type is British pound and in thousands.

Then we find corresponding **Concepts** in our Taxonomy. See:

Elements by label Report

ID	Bal	Per	Nil	Type	NS	Name/Labels/Documentation
1	D	I	T	Monetary	ci	Building Building(en, Standard Label) Documentation for Building
2	D	I	T	Monetary	ci	ComputerEquipment Computer Equipment (en, Standard Label) Documentation for Computer Equipment
3	D	I		(String)	ci	<i>DepreciableClasses</i> Depreciable Classes (en, Standard Label) Documentation for Depreciable Classes
4	D	I	T	Monetary	ci	FurnitureFixtures Furniture Fixtures (en, Standard Label) Documentation for Furniture Fixtures
5	D	I	T	Monetary	ci	Land Land(en, Standard Label) Documentation for Land
6		I		(String)	ci	<i>NonDepreciableClasses</i> Non-Depreciable Classes (en, Standard Label) Documentation for Non-Depreciable Classes
7	D	I	T	Monetary	ci	Others Others(en, Standard Label) Documentation for Others
8		I		(String)	ci	<i>PropertyPlantEquipment</i> Property Plant and Equipment (en, Standard Label) Documentation for Property Plant and Equipment
9	D	I	T	Monetary	ci	TotalPropertyPlantEquipment Total Property Plant and Equipment (en, Standard Label) Documentation for Total Property Plant and Equipment

After ward, we need to work out the Presentation and Definition of the data:



Actual instance document code will look like:

```
<xbrl xmlns="http://www.xbrl.org/2003/instance"
  xmlns:xlink="http://www.w3.org/1999/xlink"
  xmlns:link="http://www.xbrl.org/2003/linkbase"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:ci="http://www.xbrl.cn/Patterns/Sample"
  xmlns:scenarios="http://www.xbrl.org/frta/scenarios"
  xmlns:ios4217="http://www.xbrl.org/2003/iso4217"
  xsi:schemaLocation="http://www.xbrl.cn/Patterns/Sample Sample.xsd
  http://www.xbrl.org/frta/scenarios senarios.xsd">
```

```
<link:schemaRef xlink:type="simple" xlink:href="Sample.xsd" />
```

```
<context id="I-2007">
  <entity>
    <identifier
scheme="http://www.DreamingWebsite.com">SAMP</identifier>
    </entity>
    <period>
      <instant>2007-12-31</instant>
    </period>
    <scenario>
      <scenarios:ReportingScenrio> <scenarios:Actual />
      </scenarios:ReportingScenrio>
    </scenario>
  </context>

<context id="I-2006">
  <entity>
    <identifier
DreamingWebsite.com">SAMP</identifier>
    </entity>
    <period>
      <instant>2006-12-31</instant>
    </period>
    <scenario>
      <scenarios:ReportingScenrio> <scenarios:Actual />
      </scenarios:ReportingScenrio>
    </scenario>
  </context>
  <unit id="U-Monetary">
    <measure>iso4217:GBP</measure>
  </unit>
```

```
<ci:Land contextRef="I-2007" unitRef="U-Monetary" decimals="INF">
3235000</ci:Land>
<ci:Land contextRef="I-2006" unitRef="U-Monetary" decimals="INF">
2654000</ci:Land>
```

```

<ci:Building contextRef="I-2007" unitRef="U-Monetary" decimals="INF">
185654000</ci:Building>
<ci:Building contextRef="I-2006" unitRef="U-Monetary" decimals="INF">
163357000</ci:Building>

<ci:FurnitureFixtures contextRef="I-2007" unitRef="U-Monetary"
decimals="INF">28568000</ci:FurnitureFixtures>
<ci:FurnitureFixtures contextRef="I-2006" unitRef="U-Monetary"
decimals="INF">31986000</ci:FurnitureFixtures>

<ci:ComputerEquipment contextRef="I-2007" unitRef="U-Monetary"
decimals="INF">6231000</ci:ComputerEquipment>
<ci:ComputerEquipment contextRef="I-2006" unitRef="U-Monetary"
decimals="INF">4344000</ci:ComputerEquipment>

<ci:Other contextRef="I-2007" unitRef="U-Monetary" decimals="INF">
4564000</ci:Other>
<ci:Other contextRef="I-2006" unitRef="U-Monetary" decimals="INF">
7568000</ci:Other>

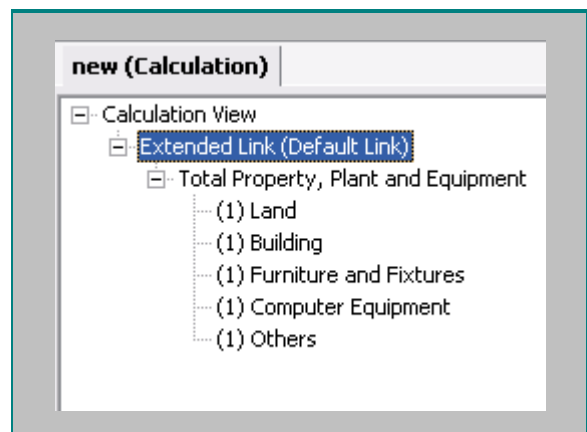
<ci>TotalPropertyPlantEquipment contextRef="I-2003" unitRef="U-
Monetary"
decimals="INF">228252000</ci>TotalPropertyPlantEquipment >
<ci>TotalPropertyPlantEquipment contextRef="I-2002" unitRef="U-
Monetary"
decimals="INF">209909000</ci>TotalPropertyPlantEquipment>

</xbrl>

```

We have differentiated different part of the code with colours to help understanding. Real codes in computer are just plain text. However, as long as you remember the role of <> with </> to separate a section, these codes are pretty simple.

Actual financial reporting data will be far more complex than our example and the relationship between items used are also complex. Fortunately, business rules are normally been set up already by official and agencies with common taxonomy. Therefore, to verify errors are pretty simple. To show the dynamics behind those validation software and online services, we will make our own rule and validate our instance document here. If the data in our sample report is correct, the instance document shall hold calculation rules on the right side of our text:



Before that, we need to validate it will XBRL specification:

Line	Type	Message ID	Message
1	Info	Info	Validating Taxonomy (ci)...
2	Info	Info	Instant Sample was XML, XBRL validated without any error
3	Info	Info	XML schema-level validation of taxonomy Sample.xsd succeeded
4	Info	Info	Validating linkbase Sample-label.xml
5	Info	Info	XML-level validation of linkbase Sample-label.xml succeeded
6	Info	Info	Validating linkbase BasicCalculation-presentation.xml
7	Info	Info	XML-level validation of linkbase Sample-presentation.xml succeeded
8	Info	Info	Validating linkbase Sample-calculation.xml
9	Info	Info	XML-level validation of linkbase Sample-calculation.xml succeeded
10	Info	Info	Validating linkbase Sample-definition.xml
11	Info	Info	XML-level validation of linkbase Sample-definition.xml succeeded
12	Info	Info	Validating Taxonomy (ci) on XBRL-level...
13	Info	Info	XBRL-level: Checking Cycles...
14	Info	Info	Taxonomy (ci) XML, XBRL validation completed: 0 errors, 0 warnings
15	Info	Info	XBRL Instance Validation of C:\CurrentFolder\XBRL Samples\Sample-instance.xml
16	Info	Info	Taxonomy: ci (Sample.xsd) Referenced Taxnomies: (none)

Then, run calculation validation with the software:

Line	Label	W	B	D-P	Value	Source	Message
1	<u>Calculations, All</u> [http://www.xbrl.org/2003/role/link]						
2	Context <u>I-2006</u> [at 2006-12-31 for SAMP Scenario 1]						
3	<u>U-Monetary</u>						
4	ci:TotalPropertyPlant Equipment		D	INF	209,909,000	both	ok
5	ci:Land	1	D	INF	2,654,000	inst	
6	ci:Building	1	D	INF	163,357,000	inst	
7	ci:FurnitureFixture	1	D	INF	31,986,000	inst	
8	ci:ComputerEquipment	1	D	INF	4,344,000	inst	
9	ci:Other	1	D	INF	7,568,000	inst	
10	Context <u>I-2007</u> [at 2007-12-31 for SAMP Scenario 1]						
11	<u>U-Monetary</u>						
12	ci:TotalPropertyPlant		D	INF	228,252,000	both	ok

	Equipment						
13	ci:Land	1	D	INF	3,235,000	inst	
14	ci:Building	1	D	INF	185,654,000	inst	
15	ci:FurnitureFixture	1	D	INF	28,568,000	inst	
16	ci:ComputerEquipment	1	D	INF	6,231,000	inst	
17	ci:Other	1	D	INF	4,564,000	inst	

From the report, we can see the calculation is consistent and there is no error in our instance document. This validation function is one of the most useful parts of XBRL. This reduced final errors, but increased complexity in the process of validating Taxonomy, Instance Document and its Calculation rules. However, in the future, when the software support for XBRL becomes more and more mature, all XBRL reporting procedures shall turn out to be simpler and simpler. Now we will demonstrate another two convenient functions enabled by XBRL:

1. Viewing XBRL Tags in Excel

The screenshot shows an Excel spreadsheet with a table of financial data. A tooltip is displayed over the 'Land' row, providing XBRL tag information. The table data is as follows:

	2007	2006
	£'000	£'000
Land	3,235	2,654
Buildings	185,654	163,357
Furniture and Fixtures	28,568	31,986
Computer Equipment	6,231	4,344
Others	4,564	7,568
Total	228,252	209,909

The tooltip text is as follows:

```

XBRL Tag
Concept Name: Land
Context: I-2006
Units: U-Monetary
Value: 2654000

XBRL code:
<ci:Land contextRef="I-2006"
unitRef="U-Monetary" decimals="INF">
2654000</ci:Land>

```

2. Saving and Output financial data in different formats: html, pdf, word , etc..

The left screenshot shows an HTML report titled 'XBRL Financial Report' displayed in a web browser. The right screenshot shows a PDF version of the same report, titled 'XBRL Sample Report (PDF)', displayed in a PDF viewer. Both reports contain the same financial data table as shown in the previous image.

This function shortens the distance between preparing financial data and publishing the data to various financial data users and for various purposes.

Benefits of Using XBRL

Think carefully, XBRL is actually only a very simply specific way to express financial term and data. The function of the language is not as powerful as many accounting software available today. If every one in this world using the same accounting software, then we don't actually need XBRL.

However, the difference is that XBRL made it seriously and made it internationally acceptable. Only XBRL has put effective actions after it or Hoffman saw the need in international financial data exchange. Only XBRL had successfully combined technique, academic and official resources together. For that reason it changes everything.

Three Features

There are chiefly three main feathers in eXtensible Business Reporting Language financial report method: Online, Universal Accepted and Real Business Related. They put XBRL onto the frontier of business reporting technology.

XBRL makes it possible to store and retrieve financial information online, which means that everyone can find real time related financial information from the internet quickly and easily. That means the accessibility of financial data information will be opened to a wider range of people at more workplaces more quickly.

XBRL is universal accepted, which means the definition of each financial data will be unique. Not only people but also machines can recognize financial data much more quickly and easily, because machines or computer software can be easily programmed to identify the numerical (mostly) data from a unique tag and use them in related operation. This means we can manipulate financial data into XBRL format and let computer software to find, store and analysis them for practical use automatically.

XBRL is created from real business implies that it has big potentials for practical use. The XBRL International organization is consisting of over 450 international companies and financial institutes. They achieve agreement and define the best taxonomies for international use. More over, all taxonomy definitions are subtracted from real accounting or more generally financial terms. The actually relationship that different financial terms have are also reflected inside XBRL definitions. This facilitates the computer software to recognize and represent relationship of financial data to the end users, and help them enhance financial theory knowledge and signify possible conflict and relationship of different data. Further more, it makes computer software be able to use current finance and accounting theories to help analysis and predict the actual behaviour of business activity. On the other hand, financial bodies themselves can easily communicate financial information with each other despite the differences of national language and even financial system.

The benefits of XBRL on XBRL.Org website

To be more specify, XBRL.Org website pointed out that XBRL can provide a more cost saving, faster, more reliable and more accurate handing of data, improved

analysis and in better quality of information and decision making. They think XBRL can almost offer major benefits to all stages of business reporting and analysis.

Automation: XBRL is 'computer readable'. Computer Software can search, access, restore and analysis financial data automatically without manual hand input, re-modify or allocate data. Business transaction and accounting information can be instantly product as the action being taken.

Cost Saving: XBRL can reduce manual labor requirement of financial information reporting and analysis, and therefore reduce financial cost in long run. Of course, in short run, financial organizations still need people to do a lot of manual input work for the original data and changing system and educating staff may also increase the cost of first period, which can be described as the setting up cost.

Faster: XBRL financial data can mostly store on a web-server, financial bodies and access XBRL formatted data from the internet instantly, which is much faster than traditional physical work. Analysis time is also reduced by computational support.

Reliable and Accurate: These two aspects of benefits are relatively depends on the situation. XBRL can make financial reporting more reliable and accurate when computer software takes charge of most creating process of financial data report, in terms of less manual cheating or mistake. However, when considering big number of computing bugs, virus and wide scale of software failure, power surcharge etc, over relying on XBRL based computer software can result in a high risk of dysfunctional hazard, which we will discuss in the next part of this paper.

Analytical: Different from previous original XML language, XBRL already defined original meanings of each data instance. Computer software can then know where to input these date for certain programmed financial theory based calculation and output desired analytical result for end users. This is especially useful for un-professionalized financers and can as well function as a reminder and reference for professional bodies.

Better Quality of information and decision making: This is mostly true, as XBRL formatted financial information is well professionalized structured and computers can improve the accurate and provide a certain lever of supportive analysis for financial data. Yet, unavoidably, there will always more or less aspect that the computers can not cover and can not do as intelligent as human. The quality of decision making is improved when considering the availability of more reference information or on the conditions when the end user has far less financial knowledge than the software.

The benefits of XBRL discussion by researchers

Dr. Somnath Bhattacharya, Ronald F.Premurose and Hodge mentioned that using XBRL helps non-professional financial statement users acquire and integrate related financial statement and footnote information when making investment decision. In addition, they mentioned that XBRL allow regulators to future the standardization and harmonization of international business reporting standards. They gave an example of the European stock Exchange. It requires all registrants to prepare consolidated financial statement in accordance with International Financial Reporting Standards as of January 2005, which they hope to improve the transparency, comparability and

quality of financial reporting across the European Union and lead to a deepening the EU's capital market. Actually, before that, in 2004, Frank D. Hodge and Jane Jollineau Kennedy already carried out a few experiment to evaluate XBRL's advantage on improving the transparency of Financial Reporting. They designed two hypothesizes that individuals who use search facilitating technology are more likely to acquire information from various places in the financial statements and footnotes than are individuals who do not use search facilitating technology and individuals who use search facilitating technology will better integrate related information from various places in the financial statements and footnotes than will individuals who do not use search facilitating technology, then organized small groups of people to carry out the experiment, whose results find that XBRL dose help financial statement users by improving the transparency of firms' financial statement information and manager's choices for reporting that information. Lok Tin and Wefield have also indirectly indicated the benefits of a XBRL based search engine for fast financial information access and acquiring in early 2001.

Cost efficiencies, automated exchange, great scope and reach of business information, frequency, timeliness, accuracy, reliability and accessibility of information are widely discussed by Debreceeny, Gray, Beatties, Pratt, Ettredge, Richardson, Scholz, William, Scifleet and Hardy, etc. Here, the benefits we didn't mention are great scope and reach of business information and frequency. The first term can be comprehended from the broad international definition and professional complete sets of XBRL taxonomies. Individuals or organizations can reach related XBRL information from across physical space boundary and look the financial data terms with a complete systematic view. The other aspect is refers to the mechanized online database system. It allows as many people and as many times they need to access to stored XBRL data.

A list of benefits that XBRL may give to different financial bodies is also widely discussed. With addition to previous benefits we mention before to Companies, Analysts, Investors and Regulators, XBRL can lead more efficient data collection lowers operating cost associated with custom, idiosyncratic data feeds, reduces errors and facilitates concentrating on adding value to the data and increasing transaction capacity to Financial publishers and data aggregators; and for independent software vendors, it will increase their potential for full-interopability with other financial and analytical application. Current CFO feed back from the introduction of xfy XBRL solution in Madrid confirmed that Enterprises can eliminate human error and increase the accuracy of financial documents by connecting data and figure in documents directly into accounting sources. Further more; they proved that accounting team can develop financial documents more quickly and accurately by using XBRL without having programming ability.

Negative Aspects of XBRL

As every new technology has its own negative aspects, so does eXtensible Business Reporting Language. Although, currently, there are very few literatures which have mentioned the undesirable circumstances when using XBRL or bad effects it might bring when XBRL be generally applied in business field in the near future. Potential hazards could be: eXtensible Business Reporting Language is too new that very few people know about it; eXtensible Business Reporting Language is still very young, its definition system is not complete yet, the taxonomies still need to be modified; the

comparable expensive setting up cost; conflicting with benefits of individual companies; other social factors, such as the fear of over-relying on computer technologies and result in big risk of financial disorder or financial crisis, or more seriously computer replace human, probable reduction on requirement of employees in financial service sector, etc.

Conclusion

To summarise, XBRL is a very simple but powerful tool that all of us should know and use and it will change the atmosphere of our financial reporting environment to be more digital. Although academy hasn't proved that eXtensible Business Reporting Language is definitely the pioneer of Online Business Reporting technology and will have a massive stimulation effect in our financial system internationally. The purpose of designing XBRL is to improve the efficiency, accuracy of all sectors of financial reporting and analysis work, and make quality financial data more accessible, standardized and usable. Probably in near future, the potential of manipulating XBRL financial reporting data with artificial intelligent business software could open a new era for financial activities of our modern life.

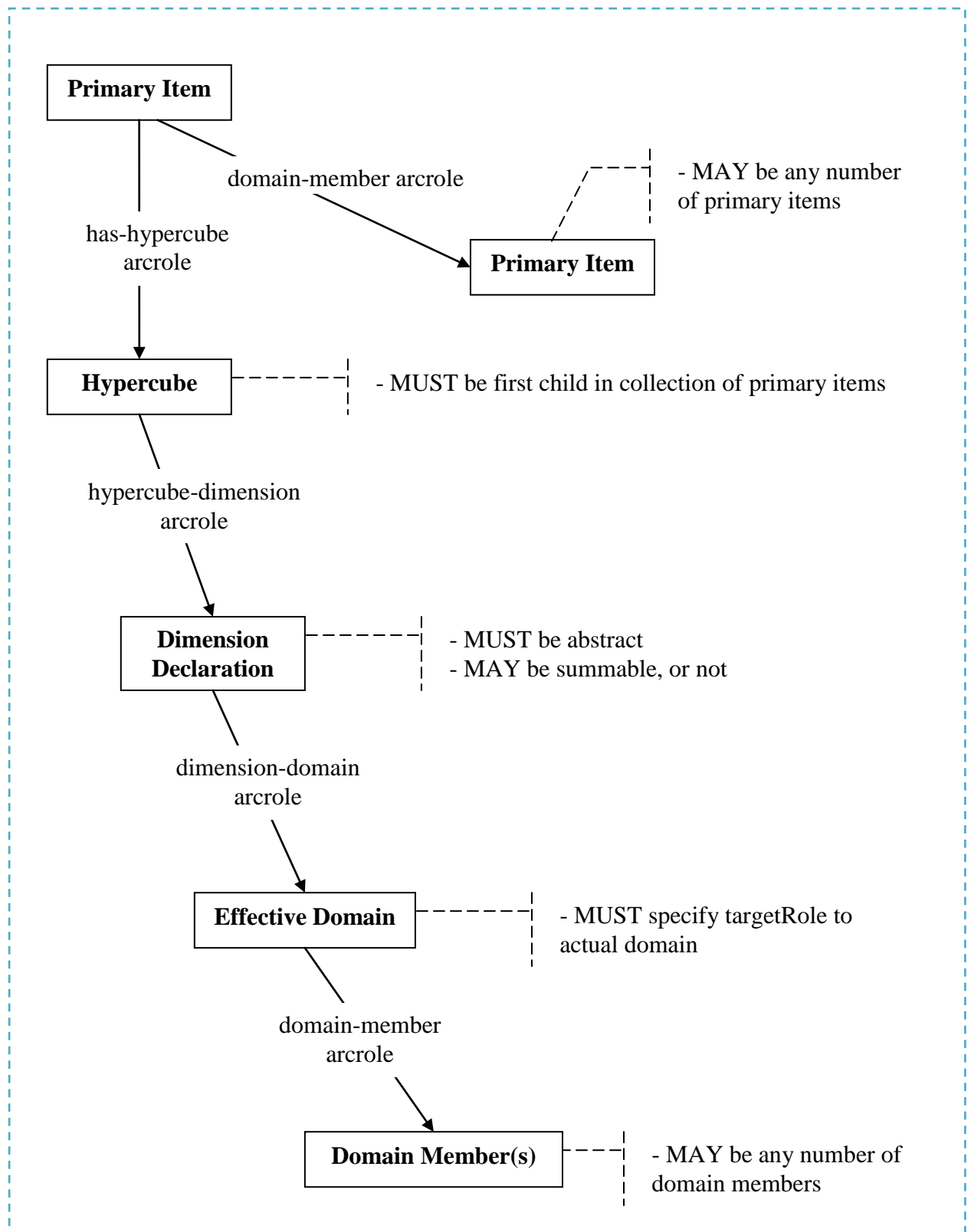
After reading this paper you shall already had a good glimpse of what XBRL is and what financial reporting issues XBRL might bring up. However, for more detailed technique instructions, please read the latest *Financial Reporting Using XBRL* book and other more technique internal scripts that can acquire. In addition, since this technology or say financial reporting methodology and standard is still changing rapidly. Please check the official website for the nearest technology update or revision.

Finally, let's cite a sentence of Charles Hoffman from the famous *'It's unstoppable'* conversation: "The European Union's capital market soon will equal that of the United States. If we don't constantly modernize our system, our profession and our nation will pay the price. XBRL can help us maintain our position as a top provider of critical services to the world's foremost source of capital. But others also can use XBRL to replace us as leaders in this arena." Do you believe XBRL will be so influential as he said? Let time and our efforts to prove.

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Ref 2.2 Structure of XBRL Dimension



Useful Links

[Www.XBRL.Org](http://www.xbrl.org)

[Www.UBmatrix.Com](http://www.ubmatrix.com)

Appendix

Current Available XBRL Software and Online Services (from XBRL.Org Website)

• [Allocation Solutions Inc](#)

Allocation Solutions **DataXchanger** XBRL conversion solution: an easy to use but technologically sophisticated financial management/e-filing system. XBRL is intrinsic; mapping a simple drag/drop capability. Data is rendered in 3 formats: XBRL instance document; Excel worksheet, Excel style sheets. The solution for non-XBRL/IT users who require valid XBRL.

• [Blast Radius](#)

Blast Radius has developed a **flexible v2.1-compliant XBRL processor** and several associated prototypes including **XBRL Web Express**, providing FREE online instance validation; **XBRL Office Express**, allowing users to import, create, validate and export XBRL instances in MS Excel; and an **XMetaL customization** for creating financial reports using XBRL.

• [Business Wire](#)

Business Wire is a global leader in commercial news distribution. Companies depend on Business Wire to transmit news releases and regulatory filings to the financial community. Business Wire's **EarningsDirect** is the first non-technical method to tag earnings news releases, enabling companies to communicate earnings directly to the capital markets in XBRL.

• [CaseWare](#)

CaseWare and CaseWare IDEA have developed XBRL enabled tools that extend across the business reporting information supply chain. With the release of **CaseWare Scenarios** and **CaseWare XBRL Benchmarking**, individuals can import a tagged GL, analyze data, produce tagged financials, and upload financials to a web-server for online analysis and benchmarking.

• [CompSci Resources, LLC](#)

CompSci's "iA" product is an XBRL analysis tool that retrieves, formats, and analyzes data stored in XBRL. An online demo of iA is available at <http://www.compsciresources.com/products.html>. The demo displays publicly available XBRL filings in an easy-to-read format. Advanced features of iA include company-to-company comparisons and spreadsheet export capabilities.

• [Coyote Reporting](#)

Coyote Reporting provides affordable software that allows real people to create, validate and view XBRL-based financial reports. Our product line includes **XBRL Pilot** for manually creating financial reports, such as those mandated in many countries. It walks the user through user-friendly input forms, and outputs a validated XBRL document.

• [Creative Solutions](#)

Creative Solutions, a Thomson company, deployed XBRL technology in the 2001 year-end release of **Write-Up Solution** and **Trial Balance Solution** software. Users of these products are able to produce custom XBRL Financial Statements to share with XBRL-enabled applications and financial institutions.

• [DecisionSoft](#)

From taxonomy design to instance document processing, DecisionSoft's products and services provide an end-to-end solution for XBRL implementation. DecisionSoft's **True North** suite provides enterprise-strength XBRL processing. **True North validator** is used by regulators worldwide. It's ideal for integration into accounting and reporting packages producing XBRL for regulators and markets.

• [Duzon Dass Co.](#)

Duzon Dass is specialized in solution products of XBRL that can be utilized in production, distribution, consumption and extension of Business Information for real-time integration and reporting.

Duzon Dass possesses portfolios such as library, which is applicable in various environments of system development, based on .NET, Java and C++, Taxonomy Editor developed for XBRL Specification, various Instance Editor, middleware handling XBRL and XBRL Financial Analyzer.

• [EDGAR Online Inc](#)

EDGAR® Online®, Inc., a leading provider of business and financial information, has created **I-Metrix**, a new suite of analytical products. Information from financial statements is standardized using v2.1 XBRL tags for cross-industry fundamental, risk and valuation analyses. Download information into templates to quickly benchmark against peers or identify opportunities.

• [Edicom](#)

EBI XBRL EDITION is a tool designed to cover all the processes required for the management of structured communications between different trading partners through multiple formats, especially XBRL. Integration with the ERP. Mapping, verifying compliance with the corresponding Taxonomy. Electronic signature, encryption. The Taxonomies Editor to load, create or modify taxonomies.

• [Fujitsu](#)

Interstage XWand is a market leading XBRL enabler used by businesses and regulatory bodies around the world. Interstage XWand enables organizations to achieve quick and accurate disclosure of financial facts, when complying with mandates like Sarbanes-Oxley and Basel II.

• [Galaxy Pty. Limited](#)

The XBRLAPI project provides an open-source Java API for XBRL. It is available under the terms of the lesser GNU General Public Licence. The API gives programmers an intuitive interface to XBRL instances and taxonomies. It works with an expanding variety of underlying databases.

• [Hitachi Ltd](#)

Hitachi released XBRL 2.1 compliant **Cosminexus Business Reporting Processor (CBRP)** with conformance to Full Conformance Suite. CBRP provides standard XBRL DOM processing and supports Formula Linkbase using XPath 2.0, taxonomy editing, FRTA- and FRIS-conformance. As a leading global solutions provider, Hitachi offers comprehensive XBRL-related services to all businesses.

• [Hitachi Systems & Services Ltd](#)

XiRUTE Libraries are the programming APIs offering data conversion (CSV, XBRL), validation and viewing functionality. XiRUTE Java supports Java™ (XBRL 2.0a/2.1) and XiRUTE .NET supports Microsoft .NET framework (XBRL 2.1). XiRUTE Taxonomy Editor / Instance Creator work on Microsoft Excel. Formulalink Editor/Validator is the tool for XBRL formula linkbases.

• [IBS](#)

IBS is a leading XBRL innovator in The Netherlands. IBS' XBRL based solution, **IBS Open Digital Reporting** is a complete solution for the internal and external financial reporting process. It can be integrated with financial systems as well as other systems such as human resource management & payroll solutions.

• [Ipedo](#)

Based upon Ipedo's Enterprise Information Integration (EII) Platform, the **XBRL Application Accelerator** significantly reduces the expense and quality problems associated with consolidating financial information. * Generate XBRL from XML and non-XML sources. * Consolidate XBRL information from different entities.

* Standardize, analyze and manage XBRL instances. * Streamline XBRL filings.

• [J2R](#)

J2R is proud to present the latest addition to its XBRL product family: **Batavia XBRL Data Driver (BXDD)**: The BXDD Toolkit enables report generation and storage facilities for any taxonomy and enterprise datasystem. Offering easy configuration, BXDD is the fastest track towards XBRL support in ERP and Accounting System solutions.

• [Microsoft](#)

Microsoft® FRx® is a financial reporting application that gives small and mid-sized businesses and divisions of large enterprises immediate control of their entire financial reporting process. FRx Software offers enhanced XBRL support in FRx 6.7.

• [PricewaterhouseCoopers](#)

PricewaterhouseCoopers is an active participant in the XBRL market community and provides clients with **seamless integration of XBRL expertise** within its innovative business reporting, risk management, performance solutions and compliance services. PricewaterhouseCoopers is currently helping clients around the world efficiently leverage the benefits of XBRL-enhanced reporting environments.

• [Pro Management](#)

Pro Management has been involved in Financial Reporting for over 20 years. Since 1996, we have offered tools to help our customers save time and money and improve the quality of their Annual (and intermediate) reports. We have provided capabilities for handling XBRL since 2004.

• [Rivet Software](#)

Rivet Software's **Dragon Tag™** XBRL enabler is the first easy-to-use and affordable Microsoft Office add-in that simplifies converting existing Microsoft Word and Excel financial data into XBRL format. Dragon Tag supports XBRL 2.1 and shields users from the technical complexity of XBRL, ensuring XBRL documents are created quickly and correctly.

• [SAP AG](#)

SAP AG supports the collection of financial statement data. Users can **load any XBRL taxonomy** and **map** elements in the taxonomy to accounting items, converting their data into **publishable XBRL instance documents**. SAP provides this XBRL functionality within SAP Strategic Enterprise Management of mySAP ERP and mySAP Business Suite.

• [SavaNet](#)

SavaNet specializes in developing XBRL tools for the professional financial analyst community. The free SavaNet XBRL Reader reads XBRL instance documents and performs advanced valuation and analysis work. SavaNet also sells a professional version of the Reader along with a Microsoft Excel-based XBRL publishing system for use in corporate and institutional investor environments.

• [Semansys Technologies BV](#)

Semansys - specialist in software for taxonomy and instance creation, processing and analysis - introduced **Next Generation XBRL productivity tools**. Semansys offers solutions for easy implementation of digital reporting, including **single button regulatory reporting**, solutions for software vendors and – with Microsoft - the **XBRL Compliance Suite** for managing reporting processes.

• [Snappy Reports](#)

Snappy Reports features are many, and include taxonomy/extension creation/development and storage, comparative version control, high throughput processing, XBRL/FRTA/FRIS validation, taxonomy composing and extending, a dimensions designer, a development collaboration communication system, instance documents and extensions, an Excel and accounting systems interface, quick and easy comparative reports in Excel, Word or the web and is well suited for Security and Exchange Commission filings.

• [Software AG](#)

The **Digital Reporting Platform** is an advanced, secure XBRL framework solution. The framework is used by service organizations to implement XBRL solutions faster and cheaper. The build-in Taxonomy and Instance document management functions allow online validation, full text retrieval, dynamic XBRL report publishing and integration to existing systems for analysis.

• [Standard Advantage](#)

Standard Advantage is a consultancy that helps governments, software vendors, and professional services companies to achieve the savings and flexibility available to them through commitments to technology standards. The CEO, Walter Hamscher, co-authored the XBRL specification and is a member of the Executive Committee and Past Chair of XBRL International.

• [TIE](#)

TIE's extensive experience in eBusiness standardization and development of Business-to-Business integration software has made XBRL a natural complement to TIE's core business. By utilizing this know-how in the world of Electronic Business Reporting, TIE's XBRL Business Integration Suite enables you to reap the full benefit of XBRL.

• [UBmatrix](#)

UBmatrix XBRL solutions enable automated business reporting, validation and analysis. Products include **Automator XBRL Professional** - to build XBRL taxonomies; **UBS** - server-based XBRL application development suite for Web applications; **XBRL Toolkit** for software vendors to create XBRL solutions; **XBRL Converter** - server-based application for importing, converting, validating, exporting data into XBRL.

• [XBI Software Inc](#)

XBI Software Inc provides XBRL consulting services to government agencies and creates **STR (straight through reporting) applications** for banks and other financial institutions. Its CovenantMonitor, under development, will use XBRL to monitor borrowing clients' banking covenants accurately, efficiently and inexpensively.