2. Introduction

In times of change learners inherit the earth,
While the learned find themselves beautifully equipped
To work in a world
That no longer exists.

–Eric Hoffer

This book is about XBRL, the Extensible Business Reporting Language, as it applies to financial reporting under International Financial Reporting Standards (IFRS) and US Generally Accepted Accounting Standards (US GAAP). Most examples are provided using IFRS, however concepts are directly applicable to US GAAP also in terms of using XBRL. IFRS and US GAAP are clearly different; concepts relating to XBRL are similar whether they apply in financial reporting using either IFRS or US GAAP. Where there are differences, these differences will be made apparent.

XBRL was developed by XBRL International (http://www.xbrl.org), a global consortium of 400+ organizations. The following is an explanation of XBRL from the XBRL International web site:

> "The eXtensible Business Reporting Language (XBRL) provides an XML-based framework that the global business information supply chain can use to create, exchange, and analyze financial reporting information including, but not limited to, regulatory filings such as annual and quarterly financial statements, general ledger information, and audit schedules. XBRL is freely licensed and facilitates the automatic exchange and reliable extraction of financial information among various software applications anywhere in the world."

This introduction describes what XBRL is, provides some outline information which is necessary to help understand XBRL and otherwise connect as many dots as possible to provide an introduction to XBRL in the environment of financial reporting.

One thing to consider is not that XBRL can be used to exchange data; but how things may change because XBRL exists. What will it mean to financial reporting if a computer can read financial reporting meta-data. XBRL in not only about exchanging information; that is only the tip of the iceberg!

2.1. Overview

This book is a resource for accountants who wish to publish financial statements using the Extensible Business Reporting Language (XBRL). It is also a resource for analysts and others who wish to extract data from these XBRL based financial statements. Others may find this resource useful, but the focus will be using XBRL for financial reporting.

This book is as non-technical as it can be today, given the current stage of evolution of XBRL and the software available which supports making use of XBRL.

By virtue of the current stage of development of XBRL, those using this edition of the book will be early adopters of XBRL. These early adopters will include consultants, accountants, academics and software developers, sharing a common desire to increase their understanding of XBRL from a variety of perspectives.

This book describes and provides examples of how to:

- read and understand XBRL taxonomies,
- express financial reporting concepts within an XBRL taxonomy,
- construct extension taxonomies,
- create instance documents,
- render XBRL instance document information in a human readable format,
- Extract information from an XBRL instance document.

In terms of prior knowledge and pre-existing skills, working successfully with XBRL, accounting taxonomies such as IFRS-GP and US GAAP and financial statements will require a certain level of expertise in both financial accounting and XML.

A good understanding of financial reporting is assumed. Terms such as "debit" and "credit", "Assets", "Liabilities" and "Weighted average exercise price of share options in share-based payment arrangements exercisable at end of period" will not be explained. Detailed knowledge of IFRS and/or US GAAP is not required.

A basic understanding of XML will make using other documents such as the XBRL 2.1 Specification, the Financial Reporting Taxonomy Architecture and Financial Reporting Instance Standards somewhat easier but it is not an essential perquisite.

This book is specific to:

- the IFRS-GP taxonomy dated 2005-05-15 and
- the USFRTF (US Financial Reporting Taxonomy Framework) dated 2005-02-28.

2.2. Open Standards

In order to understand why XBRL is important, one needs to understand why open standards are important.

In its March 2005 prospectus, IBM (International Business Machines) points out how the information technology industry trends or changes in that industry are being impacted by the convergence of three historic developments[1]:

- Network ubiquity, meaning that the internet is a public network which connects the planet,
- Open standards, meaning technical specifications which are the underpinning of transaction exchange which is a bit mundane, but vital, to all industries,
- New business designs, meaning new options business can use which did not exist before.

The important point here is that "open standards" is in the list of these historic developments. Open standards make things possible which we take for granted today, such as the fax machine. Any one of us can go to any major city in the world and obtain cash from a cash machine because of standards. We can make

a telephone call anywhere in the world because of standards. The internet is possible because of a standard, TCP/IP. The list is long.

Likewise, business reporting is undergoing a fundamental transformation. Part of these changes relate to technology. PricewaterhouseCoopers points out in their publication *XBRL: Improving Business Reporting Through Standardization* the following trends[2]:

- Market demand and regulatory requirements for business information and transparency in the reporting process have increased significantly.
- The Internet has created a ubiquitous infrastructure for global, local, intra-enterprise, and inter-enterprise connectivity.
- New data interchange standards have emerged that allow relevant information to be produced in agreed-upon format and shared across organizational and geographical boundaries.

Businesses exchange financial and other business information. This exchange of information has costs associated with it including those costs arising from the re-keying information, checking for and correcting errors, changing or otherwise updating the meta-data which is exchanged.

Again, PricewaterhouseCoopers points out[3]:

> *"Generally, standards adoption brings such benefits as lower costs, improved productivity, and greater access to goods. With the context of business reporting, market standards can provided greater efficiency, transparency, accuracy, and information reusability, among other benefits."*

Companies which innovate on top of open standards have an advantage over those which do not. Innovating on top of open standards allows resources to be freed up for higher-value work, rather than building basic infrastructure. Anyone who desires to exchange business information has the same issues. If a standards organization comes up with a solution for this problem, it may be a "least common denominator" solution and therefore proprietary solutions could be build that are better, but if the standard can be used, less resources are necessary to build a complete solution, software costs less, and you can still build the proprietary features you need within your organization.

The difficulty organizations have implementing Sarbanes-Oxley is pointing out how big a problem it is to exchange information and track the information which has been exchanged.

The bottom line here is that open standards make a lot of sense. XBRL is an global open standard.

2.3. XBRL from 50,000 feet

XBRL provides the following:

1. XBRL is a **global standard** method for the electronic exchange of business information (replacing 100s of proprietary methods). XBRL is also a method of expressing meta-data and semantics, that is how the business information can be exchanged. Basically, this is what the XBRL Specification provides.
2. XBRL represents a **global agreement of the semantics** of financial reporting concepts and business rules. These concepts and rules, the semantics, have already been created for IFRS and US GAAP. These two taxonomies provide agreed upon semantics against the respective set of

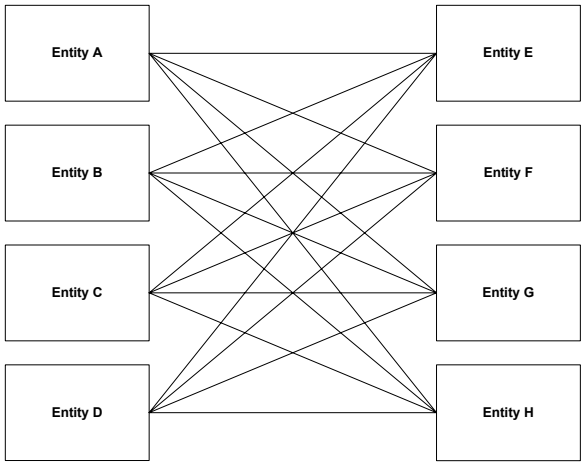
accounting standards. So, rather than each company defining it own financial reporting terms and business rules, standard taxonomies of concepts and rules have been created which enhances comparability across companies.

3. XBRL is also an **organization**, comprised of 400+ members from around the world which stands behind and maintains XBRL. The non profit organization XBRL International provides this.

XBRL will cause a fundamental change in infrastructure relating to the creation and consumption of business information as the cost/benefit model for creating and using such information has fundamentally changed.

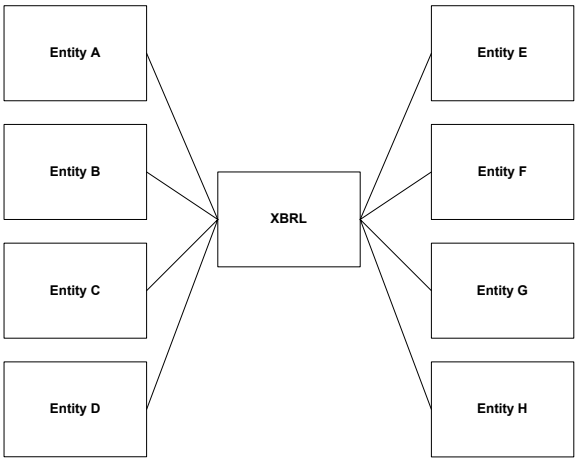
2.3.1. The Problem XBRL is Trying to Solve

The following graphic explains why XBRL is needed in terms of point 1, the "replacing 100s of proprietary methods":



Above, every entity that wishes to exchange business and financial information with another entity needs to create a "one to one" information exchange solution. This graphic does not even show the entire picture: what if "Entity A" needs to exchange information with "Entity B"? Consider only one aspect of exchanging information, validating the data. A "one-to-one" validation solution needs to be created, most likely programmatically, and will probably be of limited scope because it is so expensive to create. In addition only programmers, rather than business users, are capable of making changes to these kinds of validation solutions. This is also expensive in terms of cost and timeliness.

Now consider the graphic below:



With XBRL as the "standard" underpinning the information exchange solution an exchange of information with any other entity, requires no specification, only communication, "Lets exchange our information using XBRL". Returning to the issue of validation again, because XBRL has validation built in, not alone is validation no longer a major problem, it comes for free.

Keep in mind that the graphic communicates only one of the major advantages of XBRL. And as a by-product of fundamentally being able to exchange information, the real advantage of XBRL will eventually be realized – software which can make use of the meta-data, and others developing solutions leveraging this access to meta-data because the information is in a structured, XBRL format. Financial reporting will look substantially different in 25 years, maybe even less than that!

If you use this book you never have to go look at the XBRL specification, FRTA, FRIS. In the book we have consolidated all the information you need into either the process outlined in this book or pointed out that the functionality exists in the XBRL implementation within the software you use within that process. For example, XBRL validation, FRTA validation, and FRIS validation, XBRL Dimensions validation, XBRL Formulas validation are built into the software you should be using.

2.4. Learning Curve

XBRL is relatively new. A lot more needs to be learned about XBRL in order to use it effectively for financial reporting. IFRS is new, it is only beginning to be used around the world; not everywhere, but many places.

There is a learning curve involved. There are no short cuts, except if you hire a consultant who knows what they are doing and do all this for you. XBRL is not necessarily easy to make use of at this phase in its evolution. But I can tell you this as an accountant: financial reporting is not easy either; and compared to learning financial reporting, learning XBRL is a cake walk!

Learning XBRL is an investment. We are not going to try and convince you to make the investment. But, if you choose to make the investment, this book will help get you where you want to be, and need to be in order to be successful using XBRL.

Throughout this book we will provide the best sources for obtaining additional useful information relating to understanding and using XBRL.

2.5. XBRL Processors and Software

XBRL works most effectively with software, which understands the features of XBRL is used. This software can leverage those features. XBRL software at a minimum, must:

- Validate base taxonomies and extension taxonomies to ensure they comply with the XBRL specification and FRTA.
- Read taxonomies, linkbases, extension taxonomies, prohibited relations, overridden formulas, etc. and "resolve" that into the actual usable set concepts, relations, and rules which make up the set of meta-data.
- Validate XBRL instance documents to ensure they comply with the taxonomy set, the XBRL specification and FRIS.
- Validate instance document fact values to ensure all the calculations and other business rules give the expected results.

There are an ever-increasing number of software vendors in the XBRL segment of the market, and as with any software, they are all different in detail. The user of the software will, if the software complies with the relevant XBRL standards and specifications, be able to rely on the way the software performs the required validations. This is not unlike using different spread sheet packages.

Validation is one, albeit very important aspect of using XBRL. Another is the creation of taxonomies - both extension taxonomies and base taxonomies. Not all the software packages currently on the market are fully featured. Fully featured at this stage of software development generally means the ability to create both base and extension taxonomies as well as meet the validation requirements listed above. Some packages will validate only, others will also create extension taxonomies only. Others can write but not read XBRL.

As with any software purchasing decision, the starting point must be the business requirements. Overall costs relative to overall benefits must be weighed.

The XBRL software market is evolving rapidly and the author behoves the reader to keep abreast of developments via the internet.

2.6. Conventions Used in this Book

XBRL is all about "angle brackets". We will try and avoid the angle brackets as much as possible throughout this book. A shorthand will be created which is easier for humans to understand and read; but is "mentally map-able" to XBRL.

We will also try and use a generic graphical user interface, as opposed to one specific software solution, for explaining XBRL.

Note that throughout this book we are trying to make it easier on the non-technical user. As such, we are trying to use things which are more palatable to accountants who tend to be less technical. As such, we will do such things as using element labels rather than element names to refer to taxonomy concepts, as the labels are unique (per FRTA) and therefore you can be explicit as to which concept a label refers to. The same with extended links; we will use the unique definition rather than the funky URI to refer to extended links. Where we need to, we will use the funky technical stuff.

That said, at times we will show the angle brackets so those who choose to can take a look under the hood to see how and why XBRL works.

2.7. Organization of Book

This section describes the order in which the material is covered in the book. For readers who are new to the subject the most benefit will be derived by working through the material in the order it is presented. Subsequently it can be used as a reference book for specific topics, flipping to the information you need.

2.7.1. Business Case for XBRL

In this section we focus on explaining the business case for XBRL in non-technical terms. This section helps the reader to understand why they should invest in understanding the other portions of this document.

2.7.2. Overview, History, State, Trends of XBRL

In this section we provide a bit of background about how XBRL came to be, provide a brief overview of what it is, what it does, who built it, how it works, explain the political landscape, and explain the state or maturity of XBRL. In this section we also speculate as to the future of the XBRL specifications.

This section simply sets a foundation and provides information to the curious.

2.7.3. Getting Started with XBRL

In the section "Getting Started with XBRL" terms which need to be understood to work with XBRL are explained. The differences between native XML and XBRL are highlighted to show some of the significant distinguishing features of XBRL. It starts with an XBRL primer and finishes with a comprehensive example which is presented in a simplified format.

2.7.4. Software – Using a Taxonomy Tool

This section shows, by way of a worked example, how to use the basic features of a taxonomy tool in order to build taxonomies. Then, throughout the remaining portions of the book we build on these basics even further. By the end of the book the reader should be comfortable with the basic and intermediate concepts of XBRL and will be able to use tools in order to construct basic and intermediate level taxonomies.

2.7.5. Software – Using an Instance Tool

While the prior section covers using a taxonomy building tool, this section covers using instance document creation tools. Again, throughout the remaining sections of this book, additional basic and intermediate level concepts relating to instance documents are covered. As before by the end of the book the reader will be well versed in creating basic and intermediate level instance documents.

2.7.6. XBRL and the Financial Reporting Supply Chain

The financial reporting supply chain is explained a bit in this section to give a sense of how XBRL can serve the entire supply chain, not just one group in the supply chain. As such, XBRL has certain tradeoffs; understanding the supply chain helps to clarify those tradeoffs.

In addition, this section touches on the move from "paper-based" financial reporting to "XBRL-based" financial reporting within the supply chain. This section sets expectations and a vision of what could possibly become the future.

2.7.7. Understanding the IFRS-GP Taxonomy

The IFRS-GP taxonomy is the "base" for IFRS financial reporting using XBRL. Many jurisdictions will use this taxonomy as a base. This section helps the reader to understand the IFRS-GP taxonomy, which is critical to correctly using the taxonomy. The state and maturity of the taxonomy is discussed, how it was created will be touched on to give an understanding the current status of the taxonomy.

The use of this taxonomy by other XBRL jurisdictions such as Australia, the Netherlands and Spain is discussed with some insights into how these jurisdictions will likely "extend" the IFRS-GP taxonomy. We also discuss the Belgium Banking Taxonomy, an extension of the IFRS-GP taxonomy.

Being able to "read" an existing taxonomy is a step in being able to create a taxonomy.

2.7.8. Understanding the US Financial Reporting Taxonomy Framework (USFRTF)

The USFRTF is the "base" for US GAAP financial reporting using XBRL. This section helps the reader to understand the USFRTF, which is critical to correctly using the framework. Like the IFRS taxonomy, the state and maturity of the USFRTF is discussed, how it was created will be touched on to give an understanding the current status of the taxonomy. We will also speculate as to the future direction of this taxonomy framework.

2.7.9. Modelling Financial Reporting Concepts in Taxonomies

This section is fundamental to understanding both taxonomies and instance documents. The current version of the IFRS-GP taxonomy has approximately four thousand different elements rather than try and deal with all four thousand elements at once, in this section the taxonomy is broken down into twenty financial reporting fragments or patterns. Each pattern is looked at in the context of it being described using XBRL. There is nothing in the IFRS-GP taxonomy which is not covered in one of these patterns.

2.7.10. Assigning Instance Fact Values

Previous sections have served as an introduction to both taxonomies and instance documents. Understanding taxonomies helps to show how to create instance documents. In this section instance documents are created, one fact value at a time. There are many, many issues in creating fact values for instance documents; going through this section will both point this out, plus articulating different options.

This is where the rubber meets the road in terms of XBRL instance documents.

2.7.11. Validating XBRL Instance Documents and Taxonomies

One key part of the process of creating an XBRL instance document or taxonomy is making sure the instance document and/or taxonomy is "valid". While the validation process is covered in other sections, this section goes into the details of validation.

Validation includes many tasks, some of which can be performed by a computer application, others must be performed by humans. Some of these validation tasks include ensuring compliance to the XBRL specification, FRTA, FRIS, XBRL Dimensions, XBRL Formulas, and ensuring there are no undesired calculation

inconsistencies. But validation also includes things like ensuring that you did not use the concept "Cash" when you meant to use "Cash Restricted" or the period "2005" when you meant to use "2004".

2.7.12. Understanding and Using XBRL Dimensions

XBRL Dimensions is a modular specification which expands XBRL 2.1. XBRL Dimensions brings multidimensional analysis to XBRL. What this means is that XBRL can (a) express relations between contexts and (b) have an agreed upon way to express segment and scenario information which, without XBRL Dimensions, was wide open, therefore of limited value.

2.7.13. Understanding and Using Business Rules (XBRL Formulas and Functions)

Business rules are expressed using XBRL Formulas and is perhaps one of the most powerful and useful aspects of XBRL. XBRL Formulas and XBRL Functions are modules to the XBRL 2.1 specification which allow users to express semantics or information about a concept or the relationship between concepts and validate against those business rules or semantic meaning. Semantic validation is a feature not available in most XML languages, but it is available in XBRL.

2.7.14. XBRL Cookbook: Examples of Using XBRL

This section provides a literal "cookbook" which you can use and copy. This section walks through the creation of all of the common components of the financial statement using XBRL: financial highlights, balance sheet, income statement, cash flow statement, statement of equity, accounting policies, and explanatory disclosures. A complete financial statement is provided with the files provided with this book. The financial statement makes use of XBRL Dimensions and business rules. This section moves from simple to more and more complexity.

In addition, creating company extension taxonomies is covered to illustrate one of the key features of XBRL: extensibility, or flexibility at the user level, to allow customisation to meet specific needs.

2.7.15. Human Readable Format and XBRL

The XBRL in an instance document is in a format that is not easily read and interpreted. Instead the instance document needs to be presented in a format that is more easily consumed by humans. The conversion of an instance document into a more readable document is called rendering. A key advantage of having financial data in an instance document is that it can then be easily rendered into a variety of different presentational formats, including PDF, HTML, Excel and Word This section discusses various formatting options and their pros and cons.

2.7.16. Extracting and Using XBRL Information

Extracting XBRL data from instance documents is a simple enough process. It is very easy to extract single pieces of information and a little more difficult to do complex data extractions into analysis models. This section discusses using the data in XBRL instance documents and provides examples.

2.7.17. Understanding XBRL Versioning

Just like software has versions, XBRL taxonomies have versions. How to move from one version of a taxonomy to a newer version is one of the issues addressed in this section which discusses the XBRL Versioning Specification.

This section discusses the challenges of moving from one version of a taxonomy to another on those creating the new version, those who have created extension taxonomies on top of other taxonomies, those who create instance documents, and software vendors.

2.7.18. Vision of the Semantic Web

The semantic web section of the book expands further on the some of the original thinking behind the creation of XBRL. The semantic web, what it is, how it works, what might be possible in the future because XBRL exists are all discussed as is intelligent agent software. Because you have seen the details of how XBRL works, this section helps you see the future possibilities XBRL will create and why they are possible.

2.7.19. Some Advanced Aspects of XBRL

This book is considered to contain basic to intermediate level material on XBRL. In relation to some more advanced concepts of XBRL they are mentioned in this section for completeness. In addition this section serves as a reference guide to sources of additional resource material on these more advanced topics. Firstly, we want you to know these features exist. Second, we will point you toward resources where you can get additional information on these advanced aspects of XBRL. Third, we want you to have a complete picture of what XBRL is.

The material cover in this section includes information not covered in other sections such as XBRL GL (general ledger), the XBRL LRR (Link Role Registry), the robust extensibility mechanisms of XBRL, and additional calculation considerations such as when your decimals/precision values don't match, etc. are brought to your attention.

2.8. Appendixes

Several useful appendices are provided as a single location for reference material.

2.9. Acknowledgements

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2.10. Feedback

Comments and suggestions for future additions of this book are very welcome. They should be sent to the author at the email address shown below. Updates, additions, corrections, sample files, etc. can be obtained from the web site for this book, see: http://www.UBmatrix.com.

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