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REPORTING AND SHARING FINANCIAL INFORMATION WITH XBRL

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ABSTRACT

In less than a decade, XBRL (eXtensible Business Reporting Language) has become a standard for reporting financial data in an XML format. This paper is an introduction to XBRL, the technical documents needed to accomplish the reporting, potential problems found in current reporting mechanisms, and future directions for use of XBRL.

Keywords

XBRL, Financial Reporting, Information Systems, XML

INTRODUCTION

XBRL had its beginning in April 1998 when Charlie Hoffman began investigating the use of XML for electronic reporting of financial information. His experimental prototype of XBRL was completed by October 1999. In July of 2000 the first XBRL specification for financial statements for commercial and industrial companies was released. At that time, the formation of an international organization to expand XBRL globally for adoption. After the first international XBRL conference was held in London in 2001, XBRL was modified to reflect the World Wide Web Consortium (W3C) recommendations which allowed all XML efforts to be consistent and use common software tools. (XBRL International, n.d.)

Today, XBRL International has eighteen established jurisdictions (Australia, Belgium, Canada, Denmark, France, Germany, Ireland, Italy, Japan, Korea, Luxembourg, Netherlands, South Africa, Spain, Sweden, UAE, United Kingdom, United States) and four provisional jurisdictions (China, India, Poland, Switzerland) whose responsibilities are to focus on the progress of XBRL in their region. On June 15, 2009, the US Security and Exchange Commission's XBRL Mandate went into effect for 10-Ks filed on or after that date.

A number of Internet technologies are used to deploy XBRL. Those recommended by the W3C are listed in **Table 1**.

Technology	URL	W3C Recommendation
XML: eXtensible Markup Language	http://www.w3.org/TR/REC-xml/	XML 1.0 (Fifth Edition)
XML Schema: used to formally describe the data of a XML document	http://www.w3.org/XML/Schema/	XML Schema 1.1
XML Namespace: provides a method to create logical groupings of elements, avoiding name conflicts	http://www.w3.org/TR/REC-xml-names/	Namespaces in XML 1.0 (Third Edition)
XLink: a standard way of hyperlinking XML documents together	http://www.w3.org/TR/xlink/	XML Linking Language (XLink) 1.0
XSLT: a language to transform XML documents into other XML documents (and particularly useful for creating XHTML documents to format XML data)	http://www.w3.org/TR/xslt	XSL Transformation (XSLT) Version 1.0
XPath: a language for navigating and finding information in a XML document	http://www.w3.org/TR/xpath/	XML Path Language (XPath) Version 1.0
XQuery: a language for querying (extracting data) from XML data	http://www.w3.org/TR/xquery/	XQuery 1.0: An XML Query Language

Table 1. XBRL Technology Recommendations from W3C

We find the vocabulary of XBRL, based on its accounting background, are different than the vocabulary found in traditional information technology. Hoffman (2006) describes the basic XBRL terminology in use today, found in **Table 2**.

Term	Definition
Concept	A financial reporting concept defined in an XBRL taxonomy.
Instance Document	An XML document containing financial reporting information, presented as Concepts.
Fact (Instance) Value	Data contained in an XML element (between XML tags).
Taxonomy Document	An XML Schema that defines the structure of an Instance Document.
Discoverable Taxonomy Set (DTS)	The set of all taxonomies used by an instance document.
Context	Time period for an instance document.
Units	Units such as “US Dollars” or “Japanese Yen,” which describe the numeric fact values in an instance document.
Formulas (Business Rules)	Formula resources for an XBRL concept.

Table 2. Current XBRL Terminology

This paper will be organized as follows. We begin by looking at an example of data transformation into technical documents necessary for XBRL reporting. Next, we will look at current software support for XBRL Instance Documents used for financial reporting, as well as potential problems that have been identified with XBRL reporting. We will conclude with some comments made in an interview with Charles Hoffman, the originator of XHRL and one of the principal leaders in the XBRL movement, regarding his vision of the future of XBRL, as the creator of the initiative.

TECHNICAL TRANSFORMATION OF FINANCIAL DOCUMENTS

Current XBRL taxonomies that have been finalized and are available for use in the United States jurisdiction are found at <http://xbrl.us/taxonomies/Pages/default.aspx>:

- Mutual Fund Risk/Return Summary, Release 2008: Represents the Risk/Return Summary portion of SEC Form N-1A according to the final rule 33-8998.
- Schedule of Investments, Release 2009: Represents a Schedule of Investments for any US GAAP investment holdings report and particularly those in the “Form and Content Schedules” of SEC Regulation S-X (17 CFR part 210).
- US GAAP Investment Management Taxonomy: Intended to provide detail level accounting terms and reporting structures required by certain US GAAP-based investment management companies in order to tag financial statements in XBRL.
- XBRL US GAAP Taxonomies, 2009 Release: Represents US Generally Accepted Accounting Practices (GAAP) as of December 2008, encompassing Financial Statements and Notes to the Financial Statements.

In order to better understand the type of conversion from financial document to an XML Schema and XML, we look at an example, excerpted from Charlie Hoffman’s *Hello World* example, found at www.xbrl.com. The sample spreadsheet,

Example Company	
As of December 31 (Thousands of Dollars)	2009
Property, Plant and Equipment, Net:	
Land	5,347
Buildings, Net	244,508
Property, Plant and Equipment, Net, Total	295,183

Figure 1. Sample Financial Application Spreadsheet for Example Company

Figure 1, excerpts financial information for Example Company, in the form of an Excel spreadsheet. The structure of the elements and their relationship to each other may be found in the Taxonomy Document, an XML Schema, found in **Figure 2**. In this example, two elements are defined, `Land` and `BuildingsNet`. These values are also found in the Instance Document, an XML document, found in **Figure 3**. There are three parts to this document:

- Context: The context sets the date for the information contained in the financial report.
- Units: The financial report is in USD, which is in the `iso4217` namespace.
- Fact Values: Values for `Land` and `BuildingsNet` are included. Both of these elements are prefixed with the `hw` namespace, that is declared in the `<xblr>` root element.

The Instance (XML) Document would be transmitted to a government agency for financial reporting, Enough information, however, may be found in the Instance document so that XSLT could be easily used to recover the information to produce a usable financial report that can be displayed as XHTML.

```
<?xml version="1.0" encoding="utf-8"?>
<!-- HelloWorld Example -->
<schema
  xmlns="http://www.w3.org/2001/XMLSchema"
  xmlns:xbrli="http://www.xbrl.org/2003/instance"
  xmlns:link="http://www.xbrl.org/2003/linkbase"
  xmlns:xlink="http://www.w3.org/1999/xlink"
  xmlns:hw="http://xbrl.squarespace.com/HelloWorld"
  targetNamespace="http://xbrl.squarespace.com/HelloWorld"
  elementFormDefault="qualified"
  attributeFormDefault="unqualified">

  <import
    namespace="http://www.xbrl.org/2003/instance"
    schemaLocation="http://www.xbrl.org/2003/xbrl-instance-2003-12-31.xsd" />

  <element
    name="Land"
    type="xbrli:monetaryItemType"
    substitutionGroup="xbrli:item"
    xbrli:periodType="instant"
  />
  <element
    name="BuildingsNet"
    type="xbrli:monetaryItemType"
    substitutionGroup="xbrli:item"
    xbrli:periodType="instant"
  />

</schema>
```

Figure 2. Sample XML Schema for Example Company

SOFTWARE SUPPORT FOR XBRL INSTANCE DOCUMENT CREATION

An examination of twenty vendor websites offering software tools for the creation of XBRL instance documents was made in December 2009. These vendors were all registered and listed with XBRL International. In examining the instance document creation capabilities of the software, a wide variety of input, instance, document creation and validation was noted. The functionalities commonly found throughout the vendor offerings included:

- Pre-formatted report generation.
- Vendor-created forms for data input.
- Ability to create custom forms for data input.
- Data Combination from multiple sources (spreadsheets and databases).
- Creation of XML Instance Documents from spreadsheets.
- Input and output using CSV files.
- Tagging data for multiple uses in Instance Documents.
- Custom data validation.
- Graphical creation of Instance Documents.
- Valuation and funding calculations.
- Support for Java and .NET framework custom application development.

For the relatively rich set of functionalities available from the approved software vendor list, Bartley, Chen & Taylor (2009) found a number of errors in 10-K reporting from the 2006 voluntary filing program that began as a pilot program before the July 15, 2009 XBRL filing mandate. Errors in number signage, amounts, labeling and classification were found. These errors were considered to be potentially serious because users would not visually recognize the problems.

```
<?xml version="1.0" encoding="utf-8"?>
<!-- hw Example -->
<!-- Date/time created: 12/18/2008 8:32:48 AM -->
<xbrl xmlns='http://www.xbrl.org/2003/instance'
      xmlns:xbrli = 'http://www.xbrl.org/2003/instance'
      xmlns:link = 'http://www.xbrl.org/2003/linkbase'
      xmlns:xlink = 'http://www.w3.org/1999/xlink'
      xmlns:xsi = 'http://www.w3.org/2001/XMLSchema-instance'
      xmlns:iso4217 = 'http://www.xbrl.org/2003/iso4217'
      xmlns:hw = 'http://xbrl.squarespace.com/HelloWorld'
      xsi:schemaLocation='
        '
      >
  <link:schemaRef xlink:type='simple' xlink:href='hw.xsd' />

  <!-- Contexts -->
  <context id='I-2009'>
    <entity>
      <identifier scheme='http://www.ExampleCompany.com'>Example Company</identifier>
      <segment></segment>
    </entity>
    <period>
      <instant>2009-12-31</instant>
    </period>
  </context>

  <!-- Units -->
  <unit id='U-Monetary'>
    <measure>iso4217:USD</measure>
  </unit>

  <!-- Fact values -->
  <hw:Land contextRef='I-2009' unitRef='U-Monetary' decimals='INF'>5347000</hw:Land>
  <hw:BuildingsNet contextRef='I-2007' unitRef='U-Monetary' decimals='INF'>244508000
  </hw:BuildingsNet>
</xbrl>
```

Figure 3. XML Instance Document for Example Company

THE FUTURE DIRECTION OF XBRL REPORTING

In a recent interview with the authors, Charles Hoffman (Personal Communication, 2009) notes the majority of practitioners involved in XBRL, up to and including XBRL International, have a current focus on the deployment and initial compliance reporting with XBRL. Once technological challenges have been overcome, the real power of XBRL will become unleashed.

Hoffman explains originally developed the idea of XBRL to support information modeling and sharing between peers in management. The purpose is to allow this sharing and comparison of information without the need for costly information systems personnel. He went on to explain this paradigm with the common electronic spreadsheet. The logical model of a spreadsheet is a grid of rows and columns. Through this model, financial information can be created and easily exchanged. However, the flexibility of the spreadsheet logical model has both advantages and disadvantages. The advantage is the rich set of possibilities of modeling. The disadvantage is the lack of similar structure, often making the interchange, comparison and use of information between peers somewhat difficult.

As businesses and regulatory agencies begin to overcome the technical difficulties of implementation and potential errors, Hoffman hopes a major logical model will begin to appear that can be used throughout all regulatory agencies and businesses. Unfortunately, in these early stages, each regulatory agency is tending to construct its own proprietary logical model, making the idea of information sharing somewhat difficult.

Another current issue is that, while (for example) the SEC has collected large amounts of XBRL-formatted data about companies, there is little use of this data to compare and contrast company financials and performance - exactly the purpose of XBRL. However, Hoffman feels this is a problem that will be overcome as new software tools are developed to process and analyze the vast amounts of XBRL data that are being and have been collected. Hoffman projects that "magic" should ultimately happen when two businesspeople can exchange information using XBRL without the help of I.T. or other systems personnel.



Figure 4. The XBRL Pyramid Model, with XBRL as a foundation for the XML data in the repositories with access to business users provided by information technologies personnel.

Figure 4 shows the authors' conceptual model based on the discussion with Hoffman. In this model, the business users are able to share data independently of the technical concerns of the XBRL standards, the creation of the Instance Documents, and the information technology personnel necessary to create and maintain the repository.

CONCLUSION

The reporting of financial information has made great strides with the recent required adoption of XBRL by the US Securities and Exchange Commission. Software tools are becoming more prevalent to ease the burden of the current deep technology stack that many accounting firms are finding with the XBRL Mandate. While there are some initial inaccuracies and "bumps along the road," a unified XML format for financial reporting will provide a smoother and more automated foundation for reporting and comparisons of corporate financial data.

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