

eXtensible Business Reporting Language (XBRL) –The Digital Language of Business: An Indian Perspective

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ABSTRACT

The primary objective of the present paper is to investigate some of the major issues in delivery of business information through the Web using the ‘digital’ language of business called the eXtensible Business Reporting Language (XBRL). First, the paper briefly reviews the genesis of XBRL and related activities on the global scene. Next, the paper introduces the basic concepts of XBRL along with its operational features. Finally, the paper discusses the potential role of XBRL in India along with some potential areas for research.

eXtensible Business Reporting Language (XBRL) –The Digital Language of Business: An Indian Perspective

1. INTRODUCTION

Growth of Internet or Web¹ technology has radically transformed the global business scene. According to John Chambers, President and CEO, Cisco Systems, this revolution “will have an impact as big, if not bigger, than the Industrial Revolution” (Patel and McCarthy, 2000, p. ix). It is, therefore, no exaggeration to state that digital technology is a prime mover of the business now. The amazing popularity, growth and success of business entities such as Amazon.com, ebay.com, and Yahoo, and coinage of such terms as e-commerce (B2B, B2C, and C2C) and e-business² in the business lexicon are enough testimony to the widespread use of digital technology in the business place. In fact, it is common knowledge that trillions of dollars worth of business is transacted everyday in the world foreign exchange market using the modern communication technologies, including Internet.

Simply stated, Internet is a worldwide network of computer systems. This network provides an electronic medium for delivering, gathering and analysing information of all kinds and on virtually every subject, worthwhile or otherwise. For instance, a business unit can use this technology to create and report its financial and other business information to varied external user groups. And, periodicity of this information outflow can range from the usual annual, to quarterly, to, theoretically, real-time reporting. In the above backdrop, the primary objective of the present paper is to investigate some of the major issues in delivery of business information

¹ In this paper, terms 'Internet' and 'Web' have been used interchangeably.

² Kalakota and Robinson (1999, p. 4) define *e-commerce* as "buying and selling over digital media," while *e-business*, in addition, includes both front- and back-office [computer] applications that form the engine for modern business.”

through the Web using the ‘digital’ language of business called the eXtensible Business Reporting Language (XBRL).

The XBRL.ORG (<http://www.xbrl.org>) has defined XBRL as

“... (a) 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 ... facilitates the automatic exchange and reliable extraction of financial information among various software applications anywhere in the world.”

It may be stated in the passing here that XBRL has been variously hailed as ‘the next wave in the future of financial reporting’ (see www.accountingweb.com), the biggest thing to hit accounting since the invention of the double entry system and ‘the single most important advancement in business reporting since the spreadsheet’ (XBRLLink, 2001). In fact, XBRL coded data has a capability that the same set of data can be customized for various users, that is, there is no need for keying-in the raw data again and again for varied uses.

This paper is divided into eight sections. Section two provides the genesis of XBRL. Section three reviews the global scene. XBRL essentials – concepts, and terms – are discussed in section four. Section five illustrates some of the operational aspects of XBRL. The potential role of XBRL in India is examined in Section six. In section seven, some potential areas for research in XBRL are identified. Section eight gives a summary and conclusions of the paper.

2. GENESIS OF XBRL

The genesis of XBRL (codenamed XML-based Financial Reporting Markup Language (XFRML)³ initially) lies in the year 1998. It was in April 1998 that Charles Hoffman, a Certified Public Accountant (CPA), investigated the use of eXtensible Markup Language (XML, <http://www.W3C.org>.) for the electronic reporting of financial information in the USA, reportedly for the first time. Recognizing the potential of using XML in financial reporting, AICPA decided in October 1998 itself to fund a project aimed at creating a prototype set of financial statements in XML. And in January 1999, on presentation of the completed prototype financial statements, the AICPA was convinced that XML was important to the accounting profession. Accordingly, the AICPA Board of Directors decided to fund a detailed project focusing on the business case for XML, and in particular XML-based financial statements in July 1999. This detailed project was codenamed eXtensible Financial Reporting Markup Language (XFRML). And this marks the conception of the XBRL.

Once approved by the AICPA, the progress on the XFRML project was rather swift. In August 1999, 12 companies, (besides the AICPA), joined the project as members of the XFRML Steering Committee. Notably, this list of new members included 'Big-5' professional accountancy firms. The first meeting of the XFRML Steering Committee took place in October 1999. And in April 2000, the name of this organization was officially changed to the XBRL steering committee. This renaming of the project is significant for the obvious reason that the focus of the project was now enlarged to cover not just the domain of financial reporting but the

³ XBRL – As a concept, XBRL is an XML-based specification that allows for the preparation and exchange of financial information across all software formats, technologies including the Internet, and /or geographies. Notably, XBRL refers to both content and context of data. Unlike its predecessor XFRML, XBRL aims at reaching out beyond financial reporting to internal and external business reporting needs, and focuses on business information in general.

whole gamut of activities covered under the umbrella term of business reporting. In July 2000, in about a year's time since approval, the XBRL committee announced the on-time release of the first specification of the XBRL for Financial Statements for the commercial and industrial U.S. companies. As an update, in November 2001, the second specification of the XBRL has been released for public comment (see at <http://www.xbrl.org> for details). Also, at the this writing, the XBRL for General Ledger⁴ (XBRLGL) has been created and is available for public review and comments (see <http://www.xbrl.org/gl/gl.htm> for details).

3. XBRL AND GLOBAL SCENE

The spread of XBRL technology is not restricted only to the USA. Nor is it limited to a few members. In fact, since its approval as a project by the AICPA in July 1999, several institutions and corporate entities from around the world have joined the XBRL Steering Committee. As of this date, more than 140 organizations are members of the XBRL International. Notably, besides AICPA, several professional accountancy bodies from around the world such as Canadian Institute of Chartered Accountants (CICA), Council of Koninklijk Nederlands Instituut van Registeraccountants (NIVRA), Institute of Chartered Accountants in Australia, Institute of Chartered Accountants in England & Wales (ICAEW), Institute of Chartered Accountants in Ireland, Institute of Certified Public Accountants in Singapore, Institute of Chartered Accountants of New Zealand, Institute of Management Accountants (IMA), International Accounting Standards Board (IASB) (formerly International Accounting Standards Committee (IASC)), and International Federation of Accountants (IFAC) are members of the XBRL International. Also, this list of members includes all the 'Big-5' professional accountancy firms.

⁴ The focus of this paper is on XBRL for financial reporting and not on the general ledger.

From the corporate sector, the list of members (in alphabetical order) includes such world-renowned names as Bank of America, Deutsche Bank, Dow Jones, Fujitsu, General Electric, Hitachi, IBM, Microsoft, Moody's, Oracle, and SAP.

The global recognition of XBRL technology also is evident from this fact that International Accounting Standards Board (IASB) has released a core taxonomy (a term explained later) of XBRL for Financial Statements (IASB 2001, see also <http://www.xbrl.org/Taxonomy/int/iascf/ci/pfs/2002-04-20/>). This core taxonomy is an XML-based specification for the 'Commercial and Industrial' sector that allows users and suppliers of financial information to exchange financial statements across all software, technologies (including the Internet), and the geographies. Since, this taxonomy is based on the accounting principles enshrined in the International Accounting Standards (IASs) it shall enable a large number of countries in developing and implementing XBRL for financial statements. In fact, SANZ (Singapore, Australia, and New Zealand) project is an IAS Extension Taxonomy project. And, this project is a coordinated taxonomy development effort to leverage the IAS taxonomy by Singapore, Australia, New Zealand, and Hong Kong (a late entrant to the project). As of this date, the draft taxonomies have already been released in Singapore, Australia and New Zealand. It is expected that, once transformed in XBRL, the accounting and business information in the aforesaid countries shall attain greater interoperability for more powerful analysis and quicker discovery across all software formats and/or geographies.

At an industrial level, in October 2001 the Australian Prudential Regulatory Authority (APRA) has announced use of XBRL to collect financial statements from more than 12000 Super Funds, Insurers and Banks in Australia (see www.xbrl.org). Since, APRA is a regulatory body and forwards aggregate data to the Australian Bureau of Statistics and the Reserve Bank of Australia,

the use of XBRL shall not only reduce her data processing efforts but also cut out duplication of work and costs for those companies that are required to report to all the aforesaid three organizations. A likely outcome of this development (and the one discussed in the preceding paragraph) is the widespread recognition and possible application of the XBRL technology in the countries that are members of the IASB. Accounting principles of a large number of these member countries are either a direct adoption of the GAAP of the IASB or else they bear a close resemblance to them.

Thus, XBRL is poised to provide companies, the accounting profession, data gatherers and aggregators, the investment community and all other users of financial statements with a new, free, XML-based standard for preparing, formatting, distributing and analyzing financial reports. Figure 1 depicts this concept. Figure 1 (a) shows that under the existing external reporting process, the same data input needs to be re-processed every time it is to be re-used for meeting the informational needs of various external parties, both within the country and overseas. To illustrate, the inputs from the accounting system and other sources are processed, once, for meeting the mandated requirement to supply investors with paper-based annual report. The said data inputs may again be processed for displaying the information on the web site, or for filing with the tax-authorities and so on. On the whole, there is a lot of reworking (re-keying) of the data that translates itself in terms of additional cost, avoidable delays and possible discrepancies. However, as Figure 1 (b) shows, with accounting and other inputs formatted as per XBRL code, the same database can be used for meeting the informational needs of practically all the user-groups. Notably, the language is so designed that it shall help distributing financial information in any format - HTML documents for the Web, printed financial statements, electronic filing with the securities market regulators like the Securities and Exchange Commission (SEC) in the

US and (potentially) the Securities and Exchange Board of India (SEBI) in India, and other specialized reporting formats such as loan or tax documents. XBRL will also allow organizations to automatically exchange information between various software applications, such as general ledger systems, as well as packaged financial analytic applications software from companies like Hyperion. In short, XBRL-based information management system shall reduce redundancies and discrepancies in the business reporting environment, shall make it more efficient and effective, and ultimately, shall provide a platform for continuous reporting, monitoring and auditing.

----- Insert Figure 1 here -----

4. XBRL ESSENTIALS

In technical terms, XBRL is based on the eXtensible Markup Language (XML) (see XBRL.ORG), very much like the CML (Chemical Markup Language) and the AIML (Astronomical Instrument Markup Language). And, like every subject, some basic concepts and a terminology lie at the base of this digital language. In this section of the paper, some of the important concepts⁵ (see, e.g., Hoffman and Strand, 2001) and terms are explained in the following paragraphs (in alphabetical order).

Element – A ‘fact’ or piece of information described by XBRL taxonomy (described later) is called an element. For example, the name “assets.currentAssets” is an element. And so is “liabilities.currentLiabilities” (see www.tiac.net/users/nhannon/terms.htm).

Element Names – Evidently, element names refer to the names given to various elements (described above). They consist of two parts separated by a period using lower camel case

conventions⁶ of 80 characters total or less (see www.tiac.net/users/nhannon/terms.htm). The first part of each element name is the last part of the element name of its immediate parent. The second part is the colloquial name of the element itself. For example, “assets.currentAssets” is an element name. The first part of this name is “assets” and the second part of the name is “currentAssets”, the colloquial name (see www.XBRL.org). In this element name "assets", the first part, is the parent, and "currentAssets", the second part, is the child of the aforesaid parent. Further, the immediate parent element of the element name “assets.currentAssets” is “balanceSheet.assets”. That is, the first part of the element name “assets.currentAssets” is the last part of the element name of its immediate parent “balanceSheet.assets”.

eXtensible - An eXtensible language is essentially a programming language. In simple terms, eXtensibility refers to the ability to introduce new language elements that are used like existing ones. That is, it allows users to enrich the language by introducing new features and modifying existing ones. eXtensibility feature of a language is alternatively termed as expandability, flexibility, or customizability.

Instance document – An instance document is an XML document that contains XBRL elements. The financial statements of a company or any part thereof, expressed in XBRL, are examples of the instance document (see www.tiac.net/users/nhannon/terms.htm).

Markup Language - A markup language is simply a collection of codes that are used to indicate the structure and format of an electronic document. Hyper Text Markup Language (HTML) and XML are examples of the two more popular markup languages. Notably, HTML is designed to

⁵ The focus of this paper is on the SBRL Spec. 1. The XBRL International has recently released Sepc. 2 for public comments.

⁶ Lower Camel Case refers to all words if the start word is in lower case, and Upper Camel Case refers to all words if the start word is in upper case.

display data and it focuses on how the data look. XML, on the other hand, is designed to describe data and it focuses on what data are (content and context).

Schema - A system of representing a data model that defines the data's elements and attributes, and the relationship among elements. Would it be okay if we combine this definition with that of XML Schema given below or should we give both these definitions?

Taxonomy – Taxonomy refers to an XML schema that defines new elements such that each element corresponds to a concept that can be referenced in the XBRL documents. In simple terms, taxonomy is a classification system for business and financial reporting data elements. XBRL taxonomies can be regarded as extensions of XML Schema (see www.tiac.net/users/nhannon/terms.htm).

XBRL - XBRL is a mark-up language. It provides an XML-based framework that the global business information supply chain can use to create, exchange, and analyze financial reporting information across all software formats, technologies including the Internet⁷, and /or geographies. As a digital language, XBRL allows computer (programs) to talk to the financial statements such as a balance sheet and a profit and loss account, and other business reports such as budgets, by creating a structured, electronic (digital) version of the financial and other business information. This is accomplished by permitting the preparers of financial statements and other business information to assign meaning to information in terms that a computer can

⁷ It may be stated here that XBRL technology is useful even at a local level, which is without the Internet. However, capabilities of XBRL increase manifold when this tool is utilized in combination with the Internet, and the intelligent agent(s). In such a scenario, an expert system can be created which shall help in doing a variety of jobs like using an electronic checklist to ensure that all mandated disclosures are complied with, exchanging financial and other business data / reports, and many others. On the whole, such a system would not only reduce costs but also increase effectiveness in creating and exchanging financial and other business information.

understand. In specific terms, meaning is assigned with the help of 'mark-up tags' that provide the 'context' to the information and, as a result, help the computers understand the information.

XML - eXtensible Markup Language (XML) is a language that is designed to store, carry, and exchange data⁸. An important property of XML is that it stores data in plain text files or in databases, with the addition of some markup (tags) enclosed in angle brackets. The XML property of storing data in plain text files permits exchange of data between incompatible computer systems over the Internet. Hence, XML is of immense importance in the real world since computer systems and databases often contain data in incompatible formats. Incidentally, XML is a language for building languages and, therefore, it is at the heart of such new technological advancements and applications as business-to-business (B2B) services, wireless application protocol (WAP) browser, and the wireless markup language (WML). It also has been termed as the “mother tongue of XBRL” (see www.businessfinancemag.com)

XML Schemas – XML Schemas express shared (business) vocabularies and allow machines to carry out rules made by people. They provide a means for defining the structure, content and semantics of XML documents (see www.W3C.org).

5. XBRL – OPERATIONAL ASPECTS

XBRL is a digital language based on XML. According to Charles Goldfarb, one of the creators of Standard Generalized Markup Language (SGML), XML is to HTML like a database is to a word processor. A word processor configures the appearance of a document, but a database

⁸ Unlike HTML, which has a limited vocabulary of tags and a fixed document type definition (DTD), XML offers a rich syntax that allows dialects and vocabularies to be freely defined for expressing domain data.⁷ Every opening tag is generally accompanied by a closing tag. Whereas, for some tags like <Title> the matching closing tag is required under the HTML, for other tags like , the closing tag is optional (see www.W3C.org). The matching

manages the content and context of data. Similarly, HTML is the more specific markup language, providing tags that indicate how a Web browser should display the text and other elements of a Web page. Notably, HTML has a fixed number of tags related to how text and other elements of a Web page are to be displayed. For example there are tags for title (<Title>), headings (<H1> to <H6>, with H1 being most important and H6 being least important), paragraphs (<p>), making text bold (), images () etc. Here is an example to make the text bold (tag 'B') in HTML:

HTML program: This text should be in bold⁷

Text would display on the Web page as: **This text should be in bold**

By contrast, XML lets one create ones own tags. Thus it is flexible in this sense. Importantly, XML deals both with content and context of data. . For example, if one wants to create the address part of a purchase order for customers purchasing items through the Internet, here is how it would look like in XML:

```
<customer id="0001">
  <name>Sunil Kumar</name>
  <address>523 Station Road</address>
  <city>New Delhi</city>
  <state> New Delhi</state>
  <pin>110 001</pin>
  <country>India</country>
</customer>
```

It is the general language used to create a specific markup language like XBRL. Notably, Dell was one of the first big companies to put XML technology to use in 1999 for exchange of documents with its trading partners. And, companies like Great Plains have produced a full set of

closing tag is written with a backslash (/) preceding it. For instance, for bold case opening tag (), the matching

financial statements using XBRL, an XML derivative. In the following paragraphs some fundamental aspects of XBRL are illustrated for Infosys Technologies Limited, a company listed on both Indian and US organized stock exchanges.

Assume that ‘cash and cash equivalents’ of Infosys Technologies Limited are to be represented in the XBRL format. An examination of the annual report of the company for the year 2001 shows that it had ‘cash and cash equivalents’ worth US \$ 124,084,245 as at March 31, 2001 and \$ 116,599,486 as at March 31, 2000 (see Infosys Technologies Annual Report, 2001).

Using the XBRL taxonomy, the above information could be represented as follows:

```
<group>
  <group type="currentAssets.cashAndCashEquivalents">
    <item period="2000-03-31">$116,599,486 </item>
    <item period="2001-03-31">$124,084,245 </item>
  </group>
```

XBRL Taxonomy

The term taxonomy, in general, means the science of classification. Biologists have used taxonomy to classify plants and animals in hierarchies of superior and subordinate groups. The classification schemes, in general, depend on the purpose. In the present context, the purpose of developing XBRL taxonomy is to map the classification of business information for business reporting, whether for internal use or external use. The classification of business information for external reporting purposes is governed by the generally accepted accounting principles (GAAP) of the specific country or the International Accounting Standards Board (IASB) as relevant to the external reporting environment. The XBRL International Committee is in the process of

closing tag is .

developing taxonomies for various countries based on the respective GAAPs including International Accounting Standards (see, IASC 2001).

As mentioned earlier, in July 2000, the XBRL International Steering Committee announced the first version of the C&I Taxonomy for Financial Statements for the Commercial and Industrial companies in the United States of America. There are 1880 tags that map the US GAAP. This taxonomy has been developed using the domain knowledge of the experts in the field. Table 1 is an excerpt from the XBRL C&I taxonomy (see XBRL.Org for a complete list, also see Fe, Jr., et. al, 2000). The structure of the taxonomy is basically a tree structure with parent-child relationships among the elements. The structure of taxonomy deals with how best to represent the content and context.

----- Insert Table 1 here -----

In order to illustrate the taxonomy, let us consider the segment of the financial statement represented in Table 1:

- Statements**
- Document Information
-
- Balance Sheet**
- Assets
- Current Assets
- Non Current Assets
- Liabilities and Stockholders' Equity
- Liabilities
-
- Stockholders' Equity

The above segment shows that the set of financial statements consists of several 'Statements' such as Balance Sheet, along with Income Statement and Cash Flow Statement. The first

element in Table 1 is 'statements' with its label 'Statements'. The first child of this element is named as 'statements.documentInformation' with label for the child being 'Document Information'. As seen from Table 1, the July 31, 2001 version of C&I Taxonomy (Are we referring to the 2000 version as noted in this para earlier, or the 2001 version as stated here and in Table-1?) not only defines the element names and the corresponding labels but also assigns weights (0, 1, and -1), order, and type. The weight defines the business rules; a weight of 1 implies that the element value is to be added to its parent after multiplying with 1; a weight of -1 implies that the element's value is to be subtracted from its parent after multiplying with 1; a weight of 0 implies that if the element is assigned a value then it is not to be added to its parent. The order of an element defines the sibling order, i.e., the order in which the element appears as a sibling. For example, 'Current Assets' is the first child of 'Assets' and thus has order 1, and 'Non Current assets' is the second child of 'Assets' and thus has order 2. The classification 'type' represents the nature of the element whether it is a monetary (expressed as "xbrl:monetary") or a non-monetary element (such as "string"). There are six types of non-monetary elements: 'date', 'decimal', 'string', 'timePeriod', 'urlRference', and 'xbrl:shares', respectively, representing, the date, the decimal characters of the element, time period, URL reference of the entity's Web site, and the information about the entity's various types of shares.

Appendix A presents XBRL taxonomy of the financial statement segment given in Table 1. This taxonomy has been created by using the software, XBRL Solutions Taxonomy Builder (see, <http://www.xbrlSolutions.com>). This taxonomy is expressed in terms of XML schema⁹.

⁹ It is beyond the scope of this paper to present the details of the XML Schema. Interested readers should see www.w3c.org for details.

Instance Document

As mentioned earlier, an instance document represents, in fact, the facts of an entity expressed in terms of XML schema using XBRL taxonomy. An example of such a document for a condensed balance sheet of Microsoft Corporation is presented in Appendix B. The condensed version of the balance sheet of Microsoft for the years 1999 and 2000 are given in Table 2.

Appendix B may look quite intimidating. However, looking at it carefully, one can see that the first line is the required statement for XML programming. The second line is simply a statement. Line 3 to 15 show the xml namespace (xmlns) locations of the taxonomy, the instance document, schema, and other demos. The remaining lines provide the structure of the instance document and its components:

Item: An item represents a single financial fact. For example, the current assets of an entity for a particular period, is a fact. Also, an accounting policy for valuing a line item on the balance sheet is a fact. An item also contains attributes, such as ‘type’, and ‘period’. An ‘item’ contains data.

The following is an illustration of an ‘item’ with value 21702:

```
<item type="ci:assets.currentAssets">21702</item>
```

Group: ‘Group’ provides a mechanism by which one can put together related items in a group.

For example, one can put all items in a balance sheet in one group (see line 16 of Appendix B).

Also, ‘group’ can be used to group values of an item in two periods. For example, lines 17-21 of

Appendix B groups the values of current assets for two periods as follows:

```
<group type="ci:assets.currentAssets">  
  <label href="xpointer(..)" xml:lang="en">Total current assets</label>  
  <item period="1999-06-30">21702</item>  
  <item period="2000-06-30">30308</item>  
</group>
```

Label: Label can be used to override the description of an item in XBRL taxonomy. For example, in the above illustration¹⁰, the item “ci:assets.currentAssets” in the C&I taxonomy is labeled as “Total current assets.”

Attributes of Items and Groups

There are several attributes that can be used to describe both an ‘item’ or a ‘group’ of items. The following is a summary of such attributes:

DecimalPattern: It represents the way numbers are displayed. For example, in the US one can display a five digit number with two decimals points as: 21,702.00 where as in Europe the same number might be displayed as 21.702,00.

Entity: It is used to identify the business unit reporting the financial information in xbrl.

ID: It is used to uniquely identify an item or a group of items if there is a need.

Period: This represents the period for which the financial information is presented. For a balance sheet it represents a date and for income statement it represents duration of time.

Precision: This represents the number of decimal places carried in a calculation. In Appendix B (line 14), the precision is “10” implying that the calculations would be carried out up to ten decimal places.

ScaleFactor: This represents the multiplying factor to the numbers reported in the document. For example, in Appendix B (line 14), ‘scaleFactor=”6”’ implies that numbers in the Balance Sheet is to be multiplied by 1000,000.

¹⁰ href stands for hypertext reference and xml:lang represents the language used in the taxonomy. In the above

SchemaLocation: This represents the URL address of the taxonomy document.

Type: It describes a financial fact in a taxonomy and is expressed in terms of the name attribute in a taxonomy document. For example, ‘current assets’ is a financial fact which is expressed as a type= “assets.currentAssets”.

Unit: This represents the unit used for the financial fact such as “US dollars’ for account balances.

6. XBRL AND INDIA

Keeping pace with the trends worldwide, some steps have been taken in India in recent past that augur well for digitization of the financial accounting and business data. If one were to trace the evolution of the digitization of data, the whole process can be divided, at least, into two stages. One, the introduction of electronic filing of documents required by the Securities and Exchange Commission (SEC) in the US, and the second, the introduction of XBRL technology. Indian response to these two major developments is discussed in the following paragraphs.

Arguably, the SEC decision in the US in 1993 to mandate electronic filings through its Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system, marks the single most important step in the digitization of accounting and business data. Under this system, the SEC requires all public companies (except foreign companies and companies with less than \$10 million in assets and 500 shareholders) to file registration statements, periodic reports, and other forms electronically through EDGAR. Anyone is authorized under the system to access and download this information for free. That is, the system is primarily designed to make corporate

example, the language used is ‘en’ for English.

and financial information available to investors, the financial community and others in a matter of minutes, besides enhancing the speed and efficiency of SEC data processing, and benefiting listed corporate entities (electronic filers) in limited ways by reducing the paperwork and physical filing of the documents. It is believed that electronic dissemination of information generates more informed investor participation and more informed securities markets.

On lines similar to above, in India also, the Securities and Exchange Board of India (SEBI), regulator of the Indian securities market, had announced about a year ago an intention to introduce a Unified Electronic Information Gathering and Retrieval System. The system shall require companies for electronic filing of information in a standard format. And, like EDGAR system, this system shall also be accessible through SEBI's website. It is reported that top listed companies and Chambers of Commerce have welcomed this idea and have expressed their willingness and readiness to move into electronic filing rapidly (SEBI, 2000).

On the front of XBRL, the Institute of Chartered Accountants of India, the professional accountancy body in India, has announced that it has signed a memorandum of understanding with the AICPA. Under the MOU, both the Institutes have undertaken to collaborate with each other, among other things, in the development of the XBRL (see The Chartered Accountant, 2001). Surely, the XBRL has been catapulted to the center-stage of accountancy profession with this decision. And many exciting development will unfold themselves on this subject in due time.

7. POTENTIAL AREAS FOR RESEARCH

XBRL offers several exciting opportunities for research. To begin with, since a large number of countries have some uniqueness associated with their respective GAAP, there are ample opportunities available for academic and the professional accountants to devise XBRL

taxonomies appropriate to their accounting set-up. These taxonomies could be devised for commercial and industrial enterprises, not-for-profit organizations, mutual funds and various other major and unique business groups. Even when developed, it is essential that taxonomies evolve with changes in the marketplace and are kept up-to-date.

Secondly, it is worth noting that whereas XBRL has exhibited capabilities to produce the digitized version of the quantitative and descriptive data displayed through the financial statements, it is still to come to grips with information displayed through various other sections of the financial statements and the annual reports. Particularly, the information displayed through the notes to accounts and, management discussion and analysis sections of the annual reports. This is indeed a challenging area for future research.

Thirdly, the availability of XBRL coded data shall enable better financial and risk analysis by the financial community, be it the investors, financial intermediaries or institutional investors. Also, it shall be possible for software vendors to design appropriate software and intelligent agents that shall extract XBRL coded data from appropriate sources for, say, predicting the health of the company.

Finally, coding of accounting data in XBRL shall facilitate effective institutionalization of the processes of continuous monitoring and continuous reporting in the business organizations. This, in turn, shall improve the business performance and help in realization of the business objectives.

8. SUMMARY AND CONCLUSIONS

Historically, the accounting reports have been prepared and supplied to varied user-groups using the paper media. With the emergence of Internet, it is now possible for the suppliers of financial

statements to use electronic media for gathering information in a cost-efficient way and communicating it in an effective way. As a technology, XBRL is attempting to provide a language (digital) to the (electronic) accounting statements so that they are able to talk. XBRL shall enable financial reports to converse across all software and technologies. In fact, emergence of XBRL has generated many opportunities for academic research, besides making yet another tool available with the corporate management for gathering, analyzing and retrieving accounting data. It is not an overstatement to say that XBRL has caused a mini revolution in the domain of financial reporting.

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Table 1: Part of the XBRL Taxonomy (July 31, 2001, XBRL.org)

ID	Element Name	Weight	Order	Type	Element Label
1	Statements			string	Statements
2	statements.documentInformation	0	1	string	Document Information
93	statements.balanceSheet	0	4	xbml:monetary	Balance Sheet
94	balanceSheet.assets	1	1	xbml:monetary	Assets
95	assets.currentAssets	1	1	xbml:monetary	Current Assets
155	assets.noncurrentAssets	1	2	xbml:monetary	Noncurrent Assets
198	balanceSheet.liabilitiesAndStockholdersEquity	-1	2	xbml:monetary	Liabilities and Stockholders' Equity
199	liabilitiesAndStockholdersEquity.liabilities	1	1	xbml:monetary	Liabilities
293	liabilitiesAndStockholdersEquity.stockholdersEquity	1	5	xbml:monetary	Stockholders' Equity

Table 2: Condensed Balance Sheet of Microsoft

Microsoft Corp Balance Sheets (In millions)		
June 30	1999	2000
Assets		
Total current assets	21,702	30,308
Total noncurrent assets	16,923	21,842
Total assets	\$38,625	\$52,150
Liabilities and stockholders' equity		
Total liabilities	10,187	10,782
Total stockholders' equity	28,438	41,368
Total liabilities and stockholders' equity	\$38,625	\$52,150

See accompanying notes.

Figure 1a: Flow of Information in Traditional Reporting Process*.

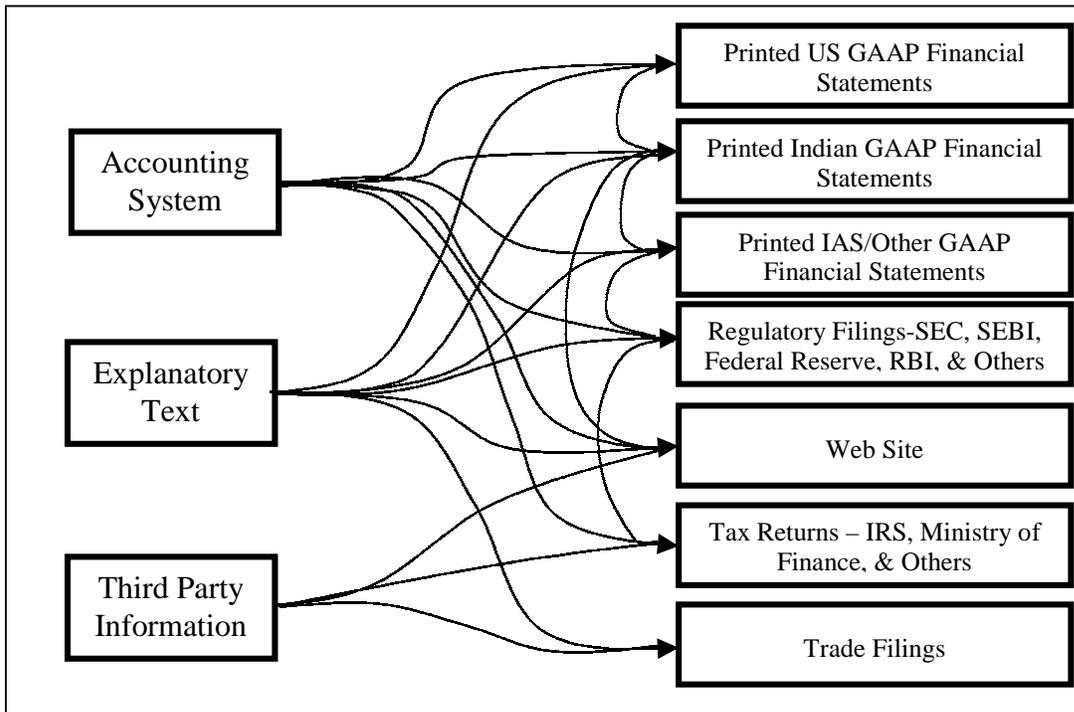
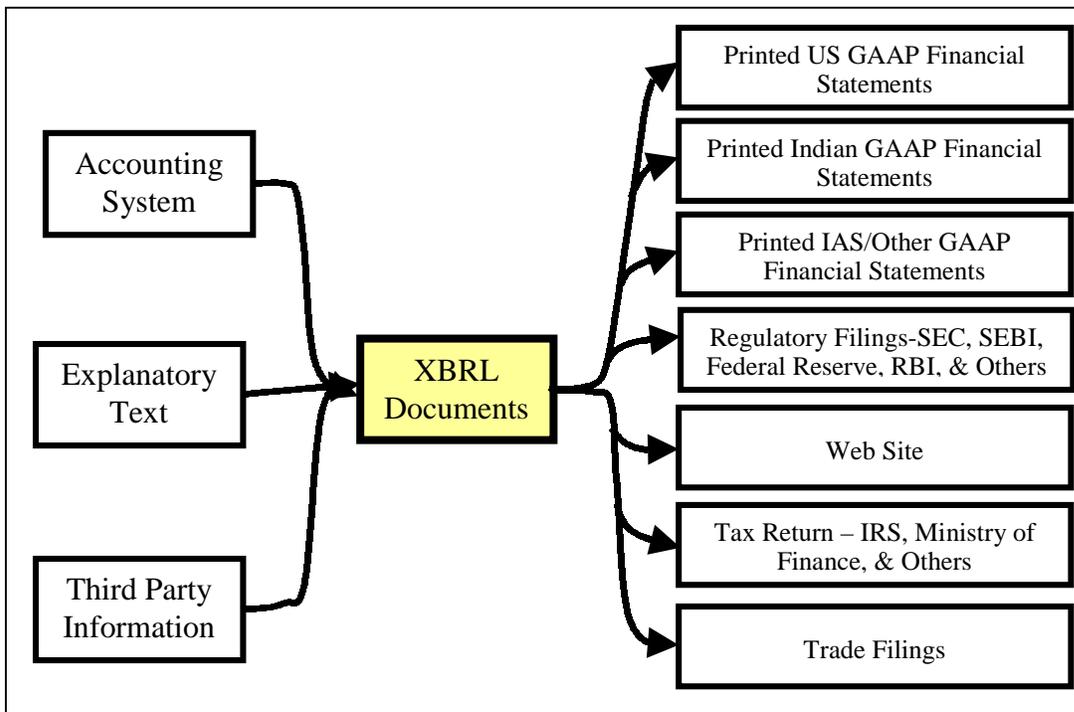


Figure 1b: Flow of Information under XBRL Reporting Process.



*Adapted and modified from Hoffman and Strand (2001).

APPENDIX A

An Example of XBRL Taxonomy in XML Schema Generated by Using XBRL Solutions Taxonomy Builder (see, xbrlSolutions.com)

```
<?xml version="1.0" encoding="utf-8"?>
<!-- Created: 7/28/2000 5:11:16 PM -->
<!-- targetNamespace names what we are defining -->
<!-- schemaLocation pairs up namespaces with actual files (URLs) since we are using the metamodel namespace, we use the schemaLocation
to point to the metamodel file. If there were an XHTML schema, we could have put in another pair of entries for the XHTML namespace and its file.
The extra whitespace characters in the schemaLocation content should improve readability and will not bother applications. -->
<schema xmlns="http://www.w3.org/1999/XMLSchema" xmlns:html="http://www.w3.org/1999/xhtml" xmlns:xbrl="http://www.xbrl.org/core/2000-07-
31/metamodel" targetNamespace="http://www.xbrl.org/us/gaap/ci/2000-07-31">
  <import namespace="http://www.xbrl.org/core/2000-07-31/metamodel" schemaLocation="http://www.xbrl.org/core/2000-07-31/xbrl-meta-2000-07-
31.xsd"/>
  <element name="statements" type="string">
    <annotation>
      <appinfo>
        <xbrl:label xml:lang="en">Statements</xbrl:label>
      </appinfo>
    </annotation>
  </element>
  <element name="statements.documentInformation" type="string">
    <annotation>
      <documentation>Section which contains information which describes the document.</documentation>
      <appinfo>
        <xbrl:rollup to="statements" weight="0" order="1"/>
        <xbrl:label xml:lang="en">Document Information</xbrl:label>
      </appinfo>
    </annotation>
  </element>
  <element name="statements.balanceSheet" type="xbrl:monetary">
    <annotation>
      <documentation>Balance sheet issued by the entity.</documentation>
      <appinfo>
        <xbrl:rollup to="statements" weight="0" order="4"/>
        <xbrl:label xml:lang="en">Balance Sheet</xbrl:label>
      </appinfo>
    </annotation>
  </element>
```

```

<element name="balanceSheet.assets" type="xbrl:monetary">
  <annotation>
    <documentation>Section which contains assets of the balance sheet.</documentation>
    <appinfo>
      <xbrl:rollup to="statements.balanceSheet" weight="1" order="1"/>
      <xbrl:label xml:lang="en">Assets</xbrl:label>
    </appinfo>
  </annotation>
</element>
<element name="assets.currentAssets" type="xbrl:monetary">
  <annotation>
    <documentation>Current assets of the balance sheet.</documentation>
    <appinfo>
      <xbrl:rollup to="balanceSheet.assets" weight="1" order="1"/>
      <xbrl:label xml:lang="en">Current Assets</xbrl:label>
    </appinfo>
  </annotation>
</element>
<element name="assets.noncurrentAssets" type="xbrl:monetary">
  <annotation>
    <documentation>Section which contains noncurrent assets of the balance sheet.</documentation>
    <appinfo>
      <xbrl:rollup to="balanceSheet.assets" weight="1" order="2"/>
      <xbrl:label xml:lang="en">Noncurrent Assets</xbrl:label>
    </appinfo>
  </annotation>
</element>
<element name="balanceSheet.liabilitiesAndStockholdersEquity" type="xbrl:monetary">
  <annotation>
    <documentation>Section which contains liabilities and stockholders equity information.</documentation>
    <appinfo>
      <xbrl:rollup to="statements.balanceSheet" weight="-1" order="2"/>
      <xbrl:label xml:lang="en">Liabilities and Stockholders' Equity</xbrl:label>
    </appinfo>
  </annotation>
</element>
<element name="liabilitiesAndStockholdersEquity.liabilities" type="xbrl:monetary">
  <annotation>
    <appinfo>
      <xbrl:rollup to="balanceSheet.liabilitiesAndStockholdersEquity" weight="1" order="1"/>
    </appinfo>
  </annotation>

```

```
                <xbrl:label xml:lang="en">Liabilities</xbrl:label>
            </appinfo>
        </annotation>
    </element>
    <element name="liabilitiesAndStockholdersEquity.stockholdersEquity" type="xbrl:monetary">
        <annotation>
            <appinfo>
                <xbrl:rollup to="balanceSheet.liabilitiesAndStockholdersEquity" weight="1" order="5"/>
                <xbrl:label xml:lang="en">Stockholders' Equity</xbrl:label>
            </appinfo>
        </annotation>
    </element>
</schema>
```

Appendix B

Instance Document Example for Balance Sheet of Microsoft. The Condensed Balance Sheet is given in Table 2.

```
<?xml version="1.0" ?>
<!-- Created by XBRL Solutions, Inc. XBRLDOM -->
<group xmlns="http://www.xbrl.org/core/2000-07-31/instance"
  xmlns:ci="http://www.xbrl.org/us/gaap/ci/2000-07-31"
  xmlns:soft="http://www.xbrlSolutions.com/Public/Demos/EdgarOnline/Repository/Taxonomies/soft"
  xmlns:Microsoft="http://www.xbrlSolutions.com/Public/Demos/EdgarOnline/Repository/XBRL/ComputerSoftware/Microsoft/Microsoft"
  schemaLocation="http://www.xbrl.org/us/gaap/ci/2000-07-31
  http://www.xbrl.org/us/gaap/ci/2000-07-31/us-gaap-ci-2000-07-31.xsd
  http://www.xbrlSolutions.com/Public/Demos/EdgarOnline/Repository/Taxonomies/soft
  http://www.xbrlSolutions.com/Public/Demos/EdgarOnline/Repository/Taxonomies/soft.xsd
  http://www.xbrlSolutions.com/Public/Demos/EdgarOnline/Repository/XBRL/ComputerSoftware/Microsoft/Microsoft
  http://www.xbrlSolutions.com/Public/Demos/EdgarOnline/Repository/XBRL/ComputerSoftware/Microsoft/Microsoft.xsd"
  id="" type="ci:statements" entity="Microsoft" units="ISO4217:USD" scaleFactor="6" precision="10"
  decimalPattern="#.#" formatName="">
<group type="ci:statements.balanceSheet">
  <group type="ci:assets.currentAssets">
    <label href="xpointer(..)" xml:lang="en">Total current assets</label>
    <item period="1999-06-30">21702</item>
    <item period="2000-06-30">30308</item>
  </group>
  <group type="ci:assets.noncurrentAssets">
    <label href="xpointer(..)" xml:lang="en">Total noncurrent assets</label>
    <item period="1999-06-30">16923</item>
    <item period="2000-06-30">21842</item>
  </group>
  <group type="ci:balanceSheet.assets">
    <label href="xpointer(..)" xml:lang="en">Total assets</label>
    <item period="1999-06-30">38625</item>
    <item period="2000-06-30">52150</item>
  </group>
  <group type="ci:liabilitiesAndStockholdersEquity.liabilities">
    <label href="xpointer(..)" xml:lang="en">Total liabilities</label>
    <item period="1999-06-30">10187</item>
```

```
    <item period="2000-06-30">10782</item>
  </group>
  <group type="ci:liabilitiesAndStockholdersEquity.stockholdersEquity">
    <label href="xpointer(..)" xml:lang="en">Total stockholders' equity</label>
    <item period="1999-06-30">28438</item>
    <item period="2000-06-30">41368</item>
  </group>
  <group type="ci:balanceSheet.liabilitiesAndStockholdersEquity">
    <label href="xpointer(..)" xml:lang="en">Total liabilities and stockholders' equity</label>
    <item period="1999-06-30">38625</item>
    <item period="2000-06-30">52150</item>
  </group>
</group>
</group>
</group>
```