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# **BUSINESS REPORTING ON THE INTERNET**

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**A REPORT PREPARED FOR THE  
INTERNATIONAL ACCOUNTING STANDARDS COMMITTEE**

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## FOREWORD

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Technology has altered irreversibly not only the physical medium of corporate financial reporting but also its traditional boundaries. Paper reports are being supplemented – and, for many users, replaced – by electronic business reporting, primarily via the Internet. And while we accounting standard-setters have, even to this day, tended to focus primarily on the traditional financial statements and related note disclosures, investors and lenders have moved far beyond that.

By requiring certain supplemental financial data and analyses in regulatory filings and shareholder reports, some securities regulators – prodded by market-driven demands for more information – have little by little chipped away at the shell surrounding conventional financial statements. The Internet has cracked the egg wide open.

To the benefit of participants in the world’s capital markets, many business enterprises have seized the moment. There is an extraordinary amount of business financial data available at the click of a mouse. Like other accounting standard-setters, the International Accounting Standards Committee has begun to think about whether the current ad hoc approach to electronic business reporting on the Internet needs to be more structured and, if so, what should be done and who should do it. The Internet easily crosses national political boundaries, so clearly some sort of international or multinational effort is warranted.

With that in mind, the IASC Secretariat has begun a project, under the direction of Paul Pacter, to consider what, if anything, IASC should do. The first step, we decided, is to gain an understanding of:

- The current technologies available for electronic business reporting;
- What companies around the world are actually doing;
- The sort of standards for electronic business reporting that are needed now, within the constraint of today’s technologies;
- The shortcomings of electronic business reporting within current technologies; and
- The technological changes that are on the horizon and how can they be harnessed (to use a word from yesteryear in a 21<sup>st</sup> century context) to improve electronic business reporting.

We looked outside our organisation for assistance. IASC has been most fortunate to benefit from the collaboration of four talented researchers. Andrew Lymer, Roger Debreceeny, Glen Gray, and Asheq Rahman are acknowledged experts in this field. Together, they have put together a blueprint for the IASC Board to consider, with some very concrete proposals for

action that we might take fairly quickly. We thank them for helping to chart a course for us.

Sir Bryan Carsberg  
Secretary-General  
International Accounting Standards Committee  
London

November 1999.

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The Director of Research, Nanyang Technological University, Singapore provided funds for a related study, from which we have derived the results shown in Chapter 3. We are grateful for the support of the University in making the survey possible. Our research assistants, Michelle Chua Shuh Luan, Leong Chou Sern, Jamy Seah, Jeff Lee Hong Chew, Lee Kim Yew and Kheng Wun Pin, laboured into the night tracking down and analysing corporate Web sites.

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# EXECUTIVE SUMMARY

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This report examines the rapidly changing world of business reporting on the Internet, with particular focus on the World Wide Web (the Web) activities. There are three purposes for conducting such an examination. The first purpose is to illustrate to accounting policy makers, at the global level, the nature of changes occurring in business reporting and to explain how those changes are affecting the dissemination of accounting and business information. The second purpose is to identify the effects those changes may have on accounting standard setting in the future. The third purpose is to recommend a set of measures to address those changes in electronic business reporting occurring now or that will be occurring in the future to help ensure the dissemination of high quality information to the users of business and financial information.

The report is organised as follows:

- Chapter 1 reviews some of the impetuses behind the proliferation of Web based business reporting. It also provides background information on the increasing types and number of corporate Web sites, and the increasing number of online traders.
- Chapter 2 explores and summarises the multitude of different electronic reporting technologies that can be used by Web designers. These technologies are not mutually exclusive, which means that a designer can use any mix of these technologies to develop a Web site.
- Chapter 3 summarises the findings of the existing literature on Web-based financial reporting and adds further findings from a survey of 660 corporations in 22 countries conducted by the authors. The chapter also discusses electronic reporting environments within national disclosure and regulatory regimes such as EDGAR and SEDAR in the USA and Canada, respectively.
- Chapter 4 examines the information presented in the prior chapters and proposes that the IASC should seriously consider the development of a “code of conduct” that would cover both the form and content aspects of Web-based business reporting.
- Chapter 5 addresses issues raised by pending and future technologies, which are evolving at a rapid rate. The chapter suggests that to add value to information consumers, it is critical that international standards setters and other organisations respond to these new technologies, which can greatly improve business reporting and subsequent Internet searches. This chapter highlights the significant need for a universal Business Reporting Language (BRL) to facilitate the electronic dissemination and use of business information. The Chapter suggests a consortia approach that will help ensure the development of standards that provide both certainty in reporting and flexibility for future innovations.

- Chapter 6 synthesises the information provided in the prior chapters to discuss the opportunities, challenges, and implications for the accounting profession and the IASC, its international standard setter.

The key message of this report is that the rapidly developing Internet-based business reporting has created conditions that will have a profound effect on the way accounting standard setting is traditionally conducted. The idiosyncrasies of the electronic medium will create problems in financial reporting that were not conceivable under the print medium. Under the paper medium presentation took a secondary role, with the main issues of contention for standard setting were centered on issues such as recognition and measurement. In other words, *form* was secondary to *substance*. Given that Web-based disclosure can provide information in many ways that can affect user perceptions of the firm, this report suggests that form is becoming important and should receive increased attention from standard setters. A code of conduct on such diversified Internet reporting would ensure that accounting data stays relevant, reliable, and understandable to the information users.

Finally, electronic networks such as the Web transcend national boundaries. Therefore business reporting on the Internet is truly *global* in nature. The IASC, as the global standard setting body for financial reporting, is the most relevant institution to address the issues raised in this report.

# 1 INTRODUCTION AND STUDY OBJECTIVES

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## 1.1 INTRODUCTION

5 Around the world an ever-increasing number of companies have World Wide Web (Web) sites on the Internet<sup>1</sup>. In addition to sales and customer service materials, a growing percentage of those companies are placing business reporting information, including financial data, on their sites. Even a cursory review of these Web sites reveals a very wide diversity in terms of content and presentation of information. Content ranges from entire annual reports, quarterly statements, and press releases to the other end of the spectrum where companies display only summary information. Presentation styles are equally diverse ranging from static information at one extreme to sites that are enlivened with sound, video, and interactive and dynamic features at the other extreme.

15 Yet, the Web-based reports that can currently be viewed only represent the first stages of development in online reporting of corporate performance. Web-based reports have great potential to be more than simply an electronic version of traditional paper reports. The Web represents a totally new reporting environment, with many implications for both the content and form of corporate reports.

20 Paralleling the rapid growth in Web-based financial and business reporting has been a remarkable growth in online investing. A wide array of individuals is regularly trading online. Many of these investors conduct all of their trading and research via the Web without any form of personal guidance from brokers or other investment professionals.

25 At the same time, there are rapid changes in business-to-business electronic commerce (eCommerce). Increasingly, new relationships are being formed to establish trading arrangements in Web-facilitated commerce. A probable success factor for the establishment and long-term success of these relationships is the provision of high quality, online business reporting information on the trading partners so as to raise the level of trust between the eCommerce partners.

30 As this report aims to map, the growing significance of electronic performance reporting and eCommerce brings opportunities, challenges and implications for the accounting profession and ultimately for the applicable regulatory organisations—both domestic and international. The rapid and accelerating development of Web-based corporate business reporting, online research and trading of securities, and eCommerce has caught many by surprise. One indication of the change is that despite the rapid adoption of the Web for corporate performance reporting, with the exception of France, there are currently no

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<sup>1</sup> The Internet is a grouping of networks that interoperate under a common suite of standards. The Internet supports a number of protocols, including FTP, Telnet and the World Wide Web. The Web is a set of protocols for the publishing of information and for the interpretation by a computer client of that information. See the Web site of the Internet Society ([www.isoc.org](http://www.isoc.org)) for an overview of the Internet. See Berners-Lee and Cailliau, (1990); Berners-Lee et al., 1992 for the origins of the Web. The site of the World Wide Web consortium ([www.w3.org](http://www.w3.org)) provides an overview of current developments on the Web.

35 national regulations, standards or guidelines that specifically apply to these Web sites. As such, companies appear to be free to select any specific combination of content and presentation from the vast multitude of possible content/presentation combinations.

40 There are three purposes for conducting such an examination. The first purpose is to illustrate to accounting policy makers, at the global level, the nature of changes occurring in business reporting and to explain how those changes are affecting the dissemination of accounting and business information. The second purpose is to identify the effects those changes may have on the accounting standard setting in the future. The third purpose is to recommend a set of measures to address those changes in Web-based business reporting occurring now or will be occurring in the future to help ensure the dissemination of high quality information to the users of business and financial information.

45 We define “business reporting” as:

*.. the public reporting of operating and financial data by a business enterprise.<sup>2</sup>*

And “Web-based business reporting” as:

*.. the public reporting of operating and financial data by a business enterprise via the World Wide Web or related Internet-based communications medium.<sup>3</sup>*

50 This report is about the improvement in quality of Web-based business reporting that transcends national boundaries. The report is organised as follows:

- 55 • **Chapter 1, Introduction and Study Objectives**—reviews some of the impetuses behind the proliferation of Web based business reporting. It also provides a background on both the increasing type and number of corporate Web sites and the number of online traders. The chapter introduces some of the implications for standard setters. The chapter also provides examples of financial reporting Web sites as a basis for deeper discussions in subsequent chapters.
- 60 • **Chapter 2, Technological Opportunities**—summarises the multitude of different technologies that can be used by Web designers. These technologies are not mutually exclusive, which means that a designer can use any mix of these technologies to develop a Web site. Each technology is briefly described and then associated issues are discussed.
- 65 • **Chapter 3, Existing Business Reporting on the Internet**—summarises the findings of various researchers who have explored Web-based financial reporting in their own countries as well as some comparative international studies. The chapter then summarises the survey of the Web

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<sup>2</sup> This definition, for which we are grateful to Paul Pacter, is broadly comparable to that of the Jenkins report: “The information a company provides to help users with capital-allocation decisions about a company. It includes a number of different elements, with financial statements as one of those elements.” See [www.aicpa.org/members/div/acctstd/ibr/chap1.htm](http://www.aicpa.org/members/div/acctstd/ibr/chap1.htm)

<sup>3</sup> In this study we have concentrated on the production and use of periodic reports comparable to those currently published by most corporations—quarterly, semi-annual and annual performance reports. We have not actively considered information that is published on an ad-hoc basis or on demand. We note, however, that the issues and recommendations we set out in Chapters 4 and 5 will apply equally to these types of disclosures. Nor have we considered the exchange of private accounting information at the transactional level.

reporting practices for 660 corporations in 22 countries conducted for this report. Finally, the chapter discusses EDGAR, SEDAR and other national disclosure and regulatory environments.

- **Chapter 4, Setting Standards for Business Reporting on the Internet:**

**The short term perspective**—builds on the information presented in the prior chapters to support our proposition that the IASC should develop standards or guidelines for the presentation of business reporting on the Web. Whether it is in their best interest or not, many investors are using the Web as a substitute for reviewing printed materials. There are standards for many of these printed materials (i.e., annual reports); therefore, it logically follows that the potential for online standards needs to be carefully considered. The standards are presented in the form of a “code of conduct” that covers various aspects Web-based business reporting. The Chapter also discusses related activities of the SEC in the USA and other national regulators.

- **Chapter 5, Standards Setting for Web-based business reporting with Future Technologies**—addresses issues raised by pending and future technologies. Chapter 4 addressed technologies currently in use in Web sites. However, Web technology evolves at a rapid rate. To get ahead of the curve, and to add value to information consumers, it will be critical for IASC and other organisations to respond to new technologies, particularly, the new eXtensible Markup Language (XML) that can greatly improve financial and business reporting and subsequent Web searches. The key of this chapter is the pending need for a universal Business Reporting Language (BRL) to facilitate the electronic dissemination of business and financial information. The Chapter discusses why a consortia approach may be the optimum way to develop future global Web-based business reporting standards.

- **Chapter 6, Conclusions**—synthesises the information provided in the prior chapters to discuss the opportunities, challenges, and implications for the accounting profession and the IASC.

The remainder of this chapter provides amplified background materials, reviews the implications of Web-based business reporting for standard setters, and further illuminates contemporary Web-based business and financial reporting.

## 1.2 BACKGROUND

### 1.2.1 Growth in Web-based Reporting

Robert Elliott, in his 1992 “Third Wave” article, noted:

*[i]nformation technology (IT) is changing everything. It represents a new, post-industrial paradigm of wealth creation that is replacing the industrial paradigm and is profoundly changing the way business is done. ... If the purpose of accounting information is to support business decision-making, and management’s decision*

110            *types are changing, then it is natural to expect accounting to change—both internal  
and external accounting*<sup>4</sup>.

Since the publication of the Elliott article there have been sustained improvements in functionality and marked cost reductions in information and communications technology. Arguably the most important change in the past five years has been the adoption of the Internet by the corporate sector and by an increasing proportion of the citizenry in more than 100 countries. The Web protocol on the Internet has provided an open, non-proprietary document representation standard that is now the *lingua franca* for networked dissemination of a wide variety of media. The ability of any Web document to refer to any other document by appropriate cross-references – hyperlinks – has provided the foundation for the creation of a vast hyperlinked information resource. The Web has materials on every imaginable topic, albeit of variable quality.

The growth of the Internet and, in particular, the Web has been rapid and sustained. Network Wizards semi-annually tracks the number of individual computers (hosts) that can be “seen” on the Internet<sup>5</sup>. In January 1993 there were 1.3m identifiable hosts, 9.5m in January 1996 and 56.2m in July 1999 – a growth of nearly 600% over the 1996 level. A study on the Web recently published in *Nature*<sup>6</sup>, estimated that there were 2.8m Web servers on the Internet in February 1999. These servers include more than 800m individual Web pages that could be indexed by the various search engines, such as AltaVista<sup>7</sup>.

The Web and the Internet are enhancing global links and reducing transaction costs in many important national economies. Indeed, the Internet and the Web can be said to be the most visible example of trends towards globalisation and knowledge economies. These developments are bringing fundamental changes to both the private and public sectors.

Web functions have reduced the cost of production of information and greatly increased the potential population of users. The Web provides instantaneous and simultaneous access to accounting information, which can be either static pages or dynamically drawn from corporate databases. The costs of printing and distributing reports are no longer a serious impediment to the dissemination of information. Nor are these costs relevant in the tailoring of information for different stakeholders and different audiences.

Changes in the form of significantly lowered costs of information dissemination, the global reach of the Internet, and in the ability of the Web to fundamentally change the form of information presentation provide substantial challenges to those responsible for business reporting. In our view, it is likely that in the next five or so years, business reporting to stakeholders will move almost entirely from the current primarily print-based mode to using the Web as the primary information dissemination channel, with the print-based mode as a secondary channel.

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<sup>4</sup> Elliott (1992), 61.

<sup>5</sup> See the July 1999 Network Wizards survey at [www.isc.org/dsview.cgi?domainsurvey/WWW-9907/report.html](http://www.isc.org/dsview.cgi?domainsurvey/WWW-9907/report.html).

<sup>6</sup> Lawrence, S, and Giles, CL. (1999, 8 July). Accessibility of information on the web. *Nature*, 400.

<sup>7</sup> Forrester research cited by Searchenginewatch. See [www.searchenginewatch.com/reports/sizes.html](http://www.searchenginewatch.com/reports/sizes.html) The largest search engine, AltaVista, indexes approximately 150m pages. These counts exclude pages that are generated dynamically from databases or included in Intranets.

The drivers for such a change are clear. First, Web information dissemination is cheaper than for print, thereby adding value to the information publisher. Second, business reporting in general and financial information in particular have high short-term temporal value. The instantaneous communication of the Web adds value to the information recipient. Third, while it is true that the value of business reporting information decays quickly over time, the same information can be reused in longitudinal and cross-sectional analyses<sup>8</sup>. Fourth, the Web allows interactive information dissemination in a fashion that is not possible in print form.

The results reported in Chapter 3 of a multinational study of the largest companies in each of 22 countries show that there has already been rapid adoption of the Web for the publication of business reporting information, including financial information.

### 1.2.2 Growth in Web-based Trading

There are also rapid changes in the *demand* for online business reporting caused by the Web. As a sector, the rapid advance of the Web has affected capital markets in general and the equity securities market in particular. Online trading is the most developed in the USA. Gomez and Associates tracks more than 100 online brokers that are active in the USA<sup>9</sup>. An analysis by Credit Suisse First Boston showed that in the first quarter of 1999, 0.5m trades per day were being transacted over the Web, representing some 16% of total trades<sup>10</sup>. The largest USA-based online securities firms now represent several million individual investors<sup>11</sup>. While the online trading of securities is most evident in the USA, online brokers are active in several countries with well-developed securities marketplaces including France and Germany<sup>12</sup>, UK<sup>13</sup>, Australia<sup>14</sup>, Hong Kong, New Zealand<sup>15</sup>, and Singapore<sup>16</sup>. Recent developments include trading securities with cellular phones<sup>17</sup>.

<sup>8</sup> See the review by Peter Job, Chief Executive, Reuters Holdings plc "The impact of information technology and communications" in ICAEW. (1998). *Performance Measurement in the Digital Age*. London: Institute of Chartered Accountants in England and Wales.

<sup>9</sup> [www.gomez.com/finance/tools/broker.cfm?tid=1](http://www.gomez.com/finance/tools/broker.cfm?tid=1)

<sup>10</sup> See "Online Trades Surge 47 Pct In First Quarter", Reuters, June 9, 1999.

<sup>11</sup> More than 70% of online volume was recorded by 5 securities firms. Selected firms and numbers of investors follow: Charles Schwab & Co reported 6.1m active investors in May 1999 trading 2m shares daily ([www.schwab.com/SchwabNOW/SNLibrary/SNLib030/SN030MonthlyActivity.html](http://www.schwab.com/SchwabNOW/SNLibrary/SNLib030/SN030MonthlyActivity.html)). Waterhouse Securities reported 1.9m active accounts in April 1999 ([www.waterhouse.com/twe.html](http://www.waterhouse.com/twe.html)) E-Trade reported 0.9m members in March 1999 ([www.etrade.com/cgi-bin/gx.cgi/AppLogic+Home?gxxml=hpb\\_invs\\_crpinf\\_c.html&lvl=investor](http://www.etrade.com/cgi-bin/gx.cgi/AppLogic+Home?gxxml=hpb_invs_crpinf_c.html&lvl=investor))

<sup>12</sup> For example, ab@x ([www.abax.tm.fr](http://www.abax.tm.fr)) and Fimatex in both France and Germany ([www.fimatex.fr](http://www.fimatex.fr) and [www.fimatex.de](http://www.fimatex.de)).

<sup>13</sup> See Barclays Stockbrokers ([www.barclays-stockbrokers.co.uk/](http://www.barclays-stockbrokers.co.uk/)) and Charles Schwab Europe ([www.schwab-worldwide.com/Worldwide/Europe/Index.html](http://www.schwab-worldwide.com/Worldwide/Europe/Index.html))

<sup>14</sup> For example, Commonwealth Securities ([www.comsec.com.au](http://www.comsec.com.au)).

<sup>15</sup> For example, D.F. Mainland ([www.dfmainland.co.nz](http://www.dfmainland.co.nz)).

<sup>16</sup> Online brokers include the Hong Kong and Shanghai Banking (HSBC) in Canada and other countries ([nettrader3.hkbc.ca](http://nettrader3.hkbc.ca)). A number of USA brokers are also active in other countries. For example, E-Trade is active in Canada, Australia, France and the Nordic countries.

<sup>17</sup> By, for example, the Fraser Securities/Singtel joint venture in Singapore ([www.fraserdirect.com.sg/](http://www.fraserdirect.com.sg/))

170 These developments are bringing to the marketplace a new class of individual investor that  
 is using the Web to trade and make investment decisions. Lowered securities transaction  
 fees have also resulted in higher transactional volumes by small investors. In the USA, so-  
 called “day traders” – retail investors that use the Web to make short-term securities  
 investments, frequently closing their positions by the end of the day – are making their  
 presence felt in the marketplace. A search on the LEXIS/NEXIS database found no less  
 175 than 830 references to “day trader” in the period from January to June 1999.

In addition to the several million retail equities investors working directly through the Web,  
 there are many more who are using the Web for research purposes<sup>18</sup>. While there is  
 currently no published evidence of how individual investors use corporate financial and  
 business reporting Web sites or other accounting and related information online, it is clear  
 180 that the Web is an important source of knowledge for current and prospective retail  
 investors. While professional investment analysts typically have access to proprietary  
 knowledge bases, the Web is nonetheless an important element in their research process  
 along with direct contact with the corporation via conference calls<sup>19</sup>.

Another feature of the widening use of Web-based business reporting is its important role in  
 185 building trust<sup>20</sup> in eCommerce<sup>21</sup>. Increasingly eCommerce will bring together more diverse  
 corporations in business-to-business, Internet-enabled transactions. Many of these  
 corporations will have little or no prior history of trading with each other. Online access to  
 business reporting information will serve to improve the level of trust in such transactions  
 by improving the flow of high quality corporate information between the trading partners.

### 190 ***1.2.3 Prospects of Web Reporting in the Context of Globalisation***

According to Rahman et al. (1999), the world is rapidly moving toward a single global  
 market for capital as well as products and services. The continuing wave of cross-border  
 mergers and acquisitions suggests that firms are increasingly seeing themselves as global  
 firms, and that:

195 *Liberalization of capital markets in combination with technological developments in  
 the information and telecommunication industries has altered the nature and  
 operation of business and financial systems of nation states. Capital access and  
 competition in a changing world have become major policy issues for corporate  
 management (e.g., Kahal, 1994), governments (e.g., Australian Treasury, 1997),  
 200 and international organizations (e.g., IASC, 1998).*

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<sup>18</sup> The Chair of E-Trade estimates that there are more than 15m private investors that actively use the Internet for investment research purposes in the USA.

<sup>19</sup> AIMR. (1998). *Using Technology and the Internet: Researching Corporate and Strategic and Financial Information*. New York: Association for Investment Management and Research.

<sup>20</sup> Kogan, A., Sudit, E. F., and Vasarhelyi, M. A. (1997) ‘Management accounting in the era of electronic commerce’, *Management Accounting*, 79(3): 26-30.; Keeney, R. L. (1999) ‘The value of Internet commerce to the customer’, *Management Science*, 45(4): 533-542.; Hoffman, D. L., Novak, T. P., and Peralta, M. (1999) ‘Building consumer trust online’, *Communications of the ACM*, 42(4): 80-85.

<sup>21</sup> See Kalakota, R., and Whinston, A. B. (1996) *Frontiers of Electronic Commerce*. Reading, Mass: Addison-Wesley. Kalakota and Whinston, 1996; Watson, R. T., Berthon, P., Pitt, L., and Zinkhan, G. (1999) *Electronic Commerce: the Strategic Perspective*. New York: The Dryden Press.



205 *The recent wave of cross-border mergers and acquisitions (e.g., Chrysler and Daimler-Benz; Deutschebank and Bankers Trust; British Petroleum and Amoco) suggest that firms increasingly see themselves not as American or German or English firms but as global firms. Walker and Fox (1997) use the term 'globalisation' to describe the process of denationalisation and distinguish it from the concept of 'internationalization'. The distinction is that globalisation suggests the erosion and irrelevance of national boundaries whereas internationalization refers to the cooperative activities of national actors.*

210 The concept of globalisation has gained considerable attention in recent years. Perera (1998) suggests several reasons for such a trend, including macro-economic, micro-economic, political, and technological factors. Although identified as separate classes of reasons for the purposes of understanding them, they have simultaneously provided impetus for globalisation.

215 At the macro-economic level, Perera (1998) suggests that globalisation has been due to trade deregulation in which domestic economies are more globally integrated. The experiences of the Asian currency crisis of 1997-98, where the problems of a few countries had a contagion effect on others, signify the emergence and implications of globalisation on macro-economics.

220 An integral part of the process of globalisation is the massive increases in investment across borders. Table 1 shows the phenomenal growth in cross-border transactions in bonds and equities over the last two decades. The magnitude and the freedom with which these transactions are occurring have created a semblance of a single global market that transcends national boundaries (Rahman et al., 1999).

225 At the micro-economic level, according to Perera (1998), the essential feature of globalisation is that firms pursue global strategies in which their activities are linked and co-ordinated on a worldwide basis. According to him, firms are increasingly involved in across border production and marketing activities, with production chains going across many countries and financing spread over several capital markets.

230 **Table 1 Cross-Border Transactions in Bonds and Equities as a Percentage of Gross Domestic Product (GDP)<sup>22</sup>**

	1975	1980	1985	1990	1995	1997	1998
United States	4	9	35	89	135	213	230
Japan	2	8	62	119	65	96	91
Germany	5	7	33	57	172	253	334
France	-	5	21	54	187	313	415
Italy	1	1	4	27	253	672	640
Canada	3	9	27	65	189	358	331

Source: Bank of International Settlements, 31 March 1999

<sup>22</sup> Gross purchases and sales of securities between residents and non-residents.

Another aspect of the micro-economic level is the relationship between firms. With globalisation, boundaries between them are rapidly dissolving.

235 The most readily identifiable prime facilitating factor for globalisation would be technology (Perera, 1998).

240 *Advances in global communication technology, for example, through the fusion of information technology and telecommunications, have played a major role (Bradley et al (eds.), 1993, Walker and Fox, 1997 and Norton et al, 1995). **The staggering amount of capital flows, production and marketing across borders would not be possible without the improvements in information technology that enable firms to send key information across borders. [emphasis added]***

245 *Modern communications technology enables businesses to operate in different parts of the world with diverse shapes and forms of organization and control. Global businesses can link directly to their customers, suppliers, and partners around the world. The dynamics of competition that results from globalisation limits the ability of MNCs to close markets by the use of product differentiation, scale economies, distribution networks and so on. As Rugman (1986) points out, early works on the theory of the MNC did not recognise this.*

#### 250 **1.2.4 Impact of Globalisation and Information Technology Developments on Regulation of Markets**

Globalisation and information technology developments have implications for many areas of business, management and market regulation. According to Esther Dyson, the Web is having a significant positive impact upon information disclosure by firms<sup>23</sup>. In the modern  
255 global market, information and investment will shed their national identities for a global perspective. In this new complex and unstable environment there is a patent need for services such as accountancy, which adds value to information consumers by providing reliable and trusted information.

260 The information revolution created by the Web has major implications for regulation of markets. As suggested by the above remarks, individual countries no longer can be effective regulatory jurisdictions. Laws or, in the absence of an effective international regulatory system, codes of conduct or standards will have to be established to govern activities that transcend national boundaries. This will certainly involve activities like information dissemination through the Web and other electronic means.

### 265 **1.3 IMPLICATIONS FOR STANDARD SETTING AND STANDARD SETTERS**

The December 1998 IASC strategic planning document, “Shaping IASC For The Future” notes:

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<sup>23</sup> Dyson, E. (1997) *Release 2.1: A Design for Living in the Digital Age*. New York: Broadway Books.

### Electronic Distribution of Information

270           30. Enterprises are beginning to use channels such as the Internet and CD-  
ROMs to distribute financial and other performance information more quickly  
and in greater volume. The availability of greater computing power is also  
making it feasible to generate information of a kind or quality that was not  
275           available only a few years ago. In time, enterprises may be reporting on a real-  
time basis. This trend may call for changes in the nature of financial reporting  
standards. Also, standard setters may need to find new mechanisms for  
responding quickly to new reporting practices stemming from the rapid  
innovation in information technology<sup>24</sup>.

The effects of globalisation and rapid advancement in information technology have  
280           received close attention by accounting professional bodies. Recent reports include the  
AICPA's Special Committees on Financial Reporting (Jenkins report)<sup>25</sup> and Assurance  
(Elliott report)<sup>26</sup>, Canada's CICA "Vision Report", and its report of the Task Force on  
Assurance Services<sup>27</sup>, by Scotland's ICAS in its 'Business Reporting - The Inevitable  
285           Change?'<sup>28</sup> report, and by the UK's "Added Value Professionals: Chartered Accountants in  
2005."<sup>29</sup> A common theme of these reports is that information technology will bring many  
changes to accounting models, accounting communications, the nature of assurance on  
these communications and finally to the profession itself.

The Financial Accounting Standards Board (FASB) in the USA and the Canadian Institute  
of Chartered Accountants (CICA) are both researching Web-based business reporting. The  
290           FASB is undertaking this as part of its review of the implications of the Jenkins Committee  
report on business reporting<sup>30</sup>. The "Faux Com" example of the Jenkins report has been  
transformed by the FASB into an online report for "Faux.Com"<sup>31</sup>. The Electronic  
Distribution of Business Information Working Group (established in late 1998) will be  
publishing a report later in 1999. The CICA commissioned a research study in 1997 and  
295           will also soon be publishing a report<sup>32</sup>. The ICAEW also published a report on "The 21<sup>st</sup>  
Century Annual Report" which considers, in part, the role of technology and the Web in the  
communication of accounting information<sup>33</sup>.

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<sup>24</sup> [www.iasc.org.uk/frame/cen4\\_64.htm](http://www.iasc.org.uk/frame/cen4_64.htm)

<sup>25</sup> [www.aicpa.org/members/div/ibr/](http://www.aicpa.org/members/div/ibr/)

<sup>26</sup> [www.aicpa.org/assurance/index.htm](http://www.aicpa.org/assurance/index.htm)

<sup>27</sup> [www.cica.ca/](http://www.cica.ca/)

<sup>28</sup> ICAS (1999). *Business Reporting- An Inevitable Change?'*. edited by V. Beattie. Scotland: The Institute of Chartered Accountants of Scotland

<sup>29</sup> [www.icaew.co.uk/depts/adm/admpolco/2005ttl.htm](http://www.icaew.co.uk/depts/adm/admpolco/2005ttl.htm)

<sup>30</sup> [www.rutgers.edu/Accounting/raw/fasb/project/busreport.html](http://www.rutgers.edu/Accounting/raw/fasb/project/busreport.html)

<sup>31</sup> [www.rutgers.edu/Accounting/raw/fasb/fauxcom/Default.htm](http://www.rutgers.edu/Accounting/raw/fasb/fauxcom/Default.htm)

<sup>32</sup> See [www.cica.ca/cica/cicawebsite.nsf/public/sgrsimpact/](http://www.cica.ca/cica/cicawebsite.nsf/public/sgrsimpact/) Report expected in late 1999.

<sup>33</sup> ICAEW. (1998). *The 21st Century Annual Report*. London: Institute of Chartered Accountants in England and Wales. See also ICAEW. (1998). *Prototype plc*. London: Institute of Chartered Accountants in England and Wales/the Centre for Tomorrow's Company.

## 1.4 INNOVATIVE APPROACHES TO WEB-BASED BUSINESS REPORTING

### 300 1.4.1 Introduction

In the chapter introduction, it was noted that electronic information delivery mechanisms have developed to the point where disclosures can be made effectively and efficiently in forms that are considerably more valuable to information consumers than that provided in print-based communication. Three examples of Web-based reporting, by RWE AG of  
305 Germany and Intel and Microsoft of the USA, illustrate this point. These examples are constructive in demonstrating innovative use of technologies and for meeting users' needs in an imaginative fashion.

Innovative as these reports are in today's context, they are only imparting a foretaste of how business reporting will be changed by the Web. While the most obvious difference in these  
310 reports, as compared with their printed equivalents, is in the *form* of reporting, the most important difference is in the nature and extent of information *disclosure*. The ability of users to view Microsoft's financial results under alternative reporting frameworks and for users to make predictions of future performance using their own assumptions represent a more substantial enhancement in the provision of information and analysis of the  
315 corporation's performance.

### 1.4.2 RWE AG

The Web financial report of RWE AG<sup>34</sup> does not employ the more sophisticated technology that that is a feature of Intel's and Microsoft's sites. It is, nonetheless, a good example of  
320 what can be done to bring together all relevant information in one set of well-designed pages.

The "About RWE" pages provide links to the financial statements, annual reports, and to many other sources of information, as can be seen from Figure 1:

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<sup>34</sup> www.rwe.de

**Figure 1: RWE AG - About RWE**

325 The investor relations page (Figure 2) provides links to financial and non-financial information:

**Figure 2: RWE AG – Investor Relations Home Page**

330 The summary financial report (Figure 3) is clean, covers three accounting periods, and has a good mix of absolute data and ratio information:

**Figure 3: RWE AG – Summary Financial Report**

At a glance		1997/98	1996/97	1995/96
RWE Group				
Net sales	DM million	72 715	72 136	65 436
Net profit for the year	DM million	2 210	2 199	1 562
RWE share of the net profit for the year	DM million	1 434	1 303	1 196
Cash-flow	DM million	10 079	9 454 <sup>3)</sup>	8 635
Investments including acquisitions	DM million	6 485	9 948	7 182
Balance-sheet equity capital <sup>1)</sup>	DM million	19 149	17 737	16 779
Balance-sheet	DM million	85 530	80 653	75 775
Workforce (as of 30.6.)	Anzahl	145 467	136 115	132 658
Personnel expenses	DM million	14 109	12 965	12 903
Net earnings per DM 5 share	DM	3,55	3,20	2,95
Cash flow per DM 5 share	DM	18,15	17,02 <sup>4)</sup>	15,69
Return on invested capital (ROIC)	%	11,2	10,6	k.A.
Return on equity capital	%	14,8	15,9 <sup>4)</sup>	12,0
RWE Aktiengesellschaft				
Subscribed capital	DM million	2 777	2 777	2 771
Net profit for the year	DM million	1 100	889	831
Profit distribution	DM million	1 000	889	831
Dividend per DM 5 share	DM	1,70	1,60	1,50
Bonus per DM 5 share	DM	0,10	-	-
Dividend including tax credit per DM 5 share <sup>2)</sup>	DM	2,57	2,29	2,14
<p>1) Including prorated special items and customers' contributions to construction costs            2) For shareholders liable to German taxation            3) Including DM 468 million for distribute-recapture effect in the Group net profit for the year            4) Including effects of distribute-recapture measures</p>				

The auditors' report (Figure 4) is shown in full:

**Figure 4: RWE AG Auditors' Report**

Annual Report

**RWE** One group. Multi utilities.  
Home | Help | Search | Deutsch | Contact

## Auditors' Report

◀ MENU

We have issued on the complete German version of the annual financial statements and report by the Board of Management an unqualified opinion in the form prescribed by Section 322 HGB (German Commercial Code).

The translation of this opinion is as follows:

"The accounting and the annual financial statements, which we have audited in accordance with professional standards, comply with the German statutory provisions. With due regard to the generally accepted accounting principles, the annual financial statements give a true and fair view of the Company's assets, liabilities, financial position and result. The report by the Board of Management, which is combined with the Management Report of RWE Aktiengesellschaft, is consistent with the annual financial statements."

Essen, 14 September 1998

C&L Deutsche Revision  
Aktiengesellschaft  
Wirtschaftsprüfungsgesellschaft

The annual report includes a number of qualitative statements. Notable amongst those disclosures is the statement on cost of capital, shown in Figure 5:

**Figure 5: RWE AG – Return on Capital Report**

**Return on Capital Concept**

**New return on capital concept introduced**

Our return on capital concept is a key instrument for planning, controlling and monitoring the business units in the RWE Group. It was first introduced in 1995. On the basis of the experience we have gained in the meantime, we elaborated and implemented a new concept in the year under review. It also serves shareholders and the capital market as a tool for evaluating the company's performance.

In a return on capital concept the ratio of the earnings of the business year to the average assets, the so-called return on invested capital (ROIC), is one of the key figures. To create value, the ROIC must be higher than the cost of capital, i. e. the costs of financing the employed assets; otherwise value will be destroyed. We have agreed on target returns for the Group and the divisions that specify by how much the capital costs are to be exceeded or how much value we seek to create.

340 The annual review (Figure 6) contains a comprehensive and thorough analysis of important elements of the company's operations and plans.

**Figure 6: RWE AG – Annual Review**

**Annual Review**  
of RWE AG and the Group

**Sales/Earnings**

**Successful 100th business year**

RWE sustained its successful pattern of business in 1997/98, its anniversary year. RWE's share in the net profit for the year increased by 10.1 % to DM 1.4 billion. The net earnings per share rose by about the same amount, to DM 3.55. Owing to the strong growth in foreign business, its share of Group net sales advanced by 4.3 percentage points to 23.1 %. The cash flow climbed from DM 9.5 billion to DM 10.1 billion.

In the 1997/98 business year we further improved our portfolio structure by way of divestitures. We have also reinforced our competitive position in the core areas by cutting costs and restructuring, as well as by means of acquisitions and cooperative ventures. The principal opportunities for growth lie in the broad-based entry into the telecommunications business and airport management.

[Development of the Group](#)  
[Divisions](#)

[Dividends/Workforce](#)

[Business Policy Measures](#)

[Investments](#)

[Research and Development](#)

[Financial Strength](#)

[Legal Proceedings](#)



### 1.4.3 Intel

345 Intel is frequently mentioned as one of the most thorough and well-designed financial  
reporting Web sites. Designed as a showcase for Intel's technology, it does provide an  
example of how the Web can be used to communicate with current and potential investors  
and other stakeholders. The principal "Company Info" page provides an entrée to not only  
350 financial and related information, but also to other aspects of the corporation. Information is  
provided on the company's relationships with its suppliers, press releases, and information  
on social and environmental issues.

**Figure 7: Intel Company Information Page**



355 The Investor Relations page (Figure 8) provides a table of contents with links to both  
current and historical information:

Figure 8: Intel Investor Relations Home Page

**Investor Relations**

[1999 Annual Meeting of Stockholders](#)

If you missed the live broadcast of the 1999 Intel Corporation annual meeting of stockholders, listen to the archive of the broadcast. You may also view the [results](#) of the voting.

[www.intel.com](#)

[Load the content of this page](#)

20 minute delayed data provided by [StockMarketQuotes.com](#)

**calendar faq's, etc**

- [Press Room](#)
- [Calendar Of Events](#)
- [Investor FAQs](#)
- [Archive](#)

**stock**

- [Stock Splits](#)
- [Stock Purchase](#)
- [Dividend Reinvestment Program](#)
- [SEC Filings](#)

**financials**

- [Earnings Releases](#)
- [Price List](#)
- [Letter To Stockholders](#)
- [Fundamentals](#)
- [Annual Reports](#)
- [10K's, 10Q's](#)

**what's new**

**Watch Dr. Craig Barrett on his 1999 European Tour** [more](#)

Keep up with the President and CEO Craig Barrett's European Tour 6/99.

**On 6/7/1999 Intel Corporation Commenced Dialogic Corporation Tender Offer** [more](#)

On June 7, 1999, Intel Corporation commenced its previously announced tender offer for the purchase of all the

**spotlight**

Read about Intel's strategy to help drive the development of an increasingly connected world in the [1999 Online Annual Report](#).

**more information**

- [Order Literature Online](#)
- [Intel Year 2000 Info](#)
- [Intel Developer's Forum](#)
- [101 Things you can do with you](#)

The annual report table of contents loads quickly, is cleanly designed and has links to the important elements of the annual report.

360

**Figure 9: Intel 1998 Annual Report – Table of Contents**

**intel.**

letter to our stockholders  
facts and figures  
our vision  
financial information  
corporate directory  
investor information  
about Intel  
printing the annual report

INTEL CORPORATION 1998  
www.intel.com | www.intc.com | proxy | annual report site map | feedback  
printer-friendly version

## Site map

[Annual Report Home](#)

[Letter to our stockholders](#)

[Facts and figures](#)

[Our vision](#)

- [Getting to a billion](#)
- [Connecting](#)
- [Innovating](#)
- [Delivering](#)
- [Intel powers the Internet](#)

[Financial information](#)

- [Financial summary](#)
- [Consolidated statements of income](#)
- [Consolidated balance sheets](#)
- [Consolidated statements of stockholders' equity](#)
- [Notes to consolidated financial statements](#)
- [Report of Ernst & Young LLP, independent auditors](#)
- [Management's discussion and analysis of financial condition and results of operations](#)
- [Financial information by quarter](#)

[Corporate directory](#)

[Investor information](#)

[About Intel](#)

[back to top](#)

\* [Legal Information](#) © 1999 Intel Corporation  
Content published April 6, 1999.

Each set of financial reports is presented in HTML for on-screen viewing. The data in each report is also available in spreadsheet format. Users of the site can download the spreadsheet and undertake their own analyses, offline. The ten-year financial summary is shown in Figure 10:

365

Figure 10: Intel 1998 Annual Report – Financial Summary

**INTEL CORPORATION 1998**  
[www.intel.com](http://www.intel.com) | [www.intel.com](http://www.intel.com) | proxy | [annual report site map](#) | [feedback](#)  
[printer-friendly version](#)

## Financial summary

[Download this statement](#) in Excel format.  
[Download all financial statements](#) in Excel format.

Ten years ended December 26, 1998  
 (In millions—except employees)

	Employees at year-end (in thousands)	Net investment in property, plant & equipment	Total assets	Long-term debt & put warrants	Stock- holders' equity	Additions to property, plant & equipment†
1998	64.5	\$ 11,609	\$ 31,471	\$ 903	\$ 23,377	\$ 4,032
1997	63.7	\$ 10,666	\$ 28,880	\$ 2,489	\$ 19,295	\$ 4,501
1996	48.5	\$ 8,487	\$ 23,735	\$ 1,003	\$ 16,872	\$ 3,024
1995	41.6	\$ 7,471	\$ 17,504	\$ 1,125	\$ 12,140	\$ 3,550
1994	32.6	\$ 5,367	\$ 13,816	\$ 1,136	\$ 9,267	\$ 2,441
1993	29.5	\$ 3,996	\$ 11,344	\$ 1,114	\$ 7,500	\$ 1,933
1992	25.8	\$ 2,816	\$ 8,089	\$ 622	\$ 5,445	\$ 1,228
1991	24.6	\$ 2,163	\$ 6,292	\$ 503	\$ 4,418	\$ 948
1990	23.9	\$ 1,658	\$ 5,376	\$ 345	\$ 3,592	\$ 680
1989	21.7	\$ 1,284	\$ 3,994	\$ 412	\$ 2,549	\$ 422

370

As we will discuss in Chapter 3, the extent of reproducing the auditor’s report varies widely between corporations around the world. In Intel’s report, the auditors’ report is reproduced in full. The corporate signature of the auditor is included as a graphic on the page. This reinforces in a visual fashion the sense of “place” of the auditors’ report.

Figure 11: Intel 1998 Annual Report – Auditor’s Report

## Report of Ernst & Young LLP, independent auditors

The Board of Directors and Stockholders, Intel Corporation

We have audited the accompanying consolidated balance sheets of Intel Corporation as of December 26, 1998 and December 27, 1997, and the related consolidated statements of income, stockholders' equity, and cash flows for each of the three years in the period ended December 26, 1998. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

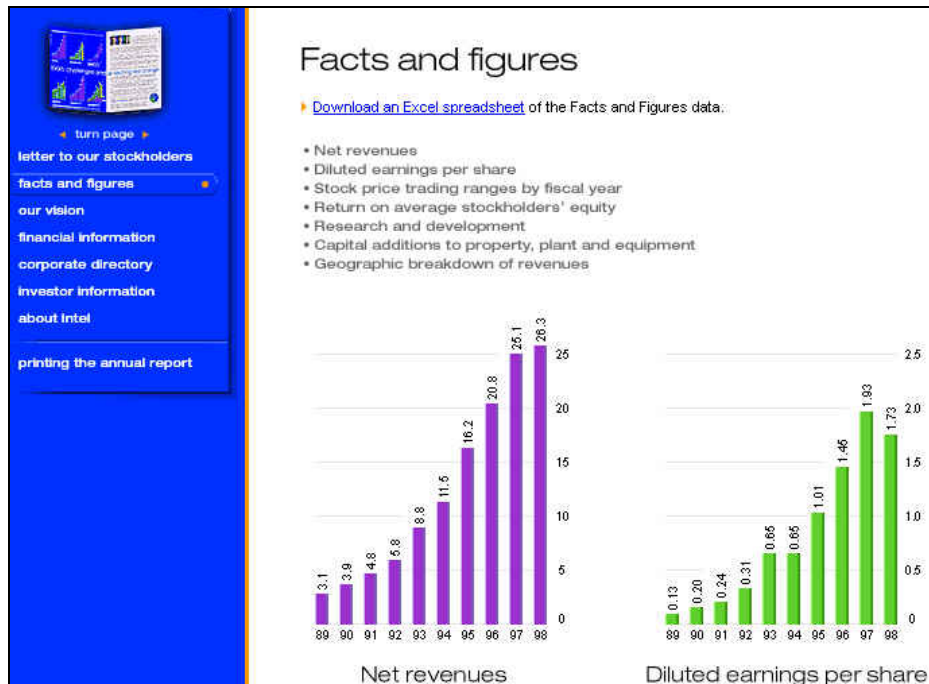
In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the consolidated financial position of Intel Corporation at December 26, 1998 and December 27, 1997, and the consolidated results of its operations and its cash flows for each of the three years in the period ended December 26, 1998, in conformity with generally accepted accounting principles.

*Ernst & Young LLP*

San Jose, California  
 January 11, 1999

375 The report makes excellent use of graphics in its “facts and figures” section (Figure 12). The graphics are well formed. Again, spreadsheet versions of the data are available for download.

**Figure 12: Intel 1998 Annual Report –Tabular and Graphical Information**



380 As the user leaves the financial reporting site, they are warned and asked, explicitly, if they wish to leave. This provides a strong visual signal of the boundary of the report. This is illustrated in Figure 13:

**Figure 13: Intel 1998 Annual Report - Graphical Indication of Leaving Annual Report**



385 In summary, the Intel report has excellent organisation and is easy to navigate, undertakes substantial reporting of relevant information, makes appropriate use of HTML, spreadsheet,



and multimedia technologies, and clearly demarcates the annual report from other elements of the corporate Web site.

### 1.4.4 Microsoft

390 Microsoft Corporation's annual reports provide examples of two important uses of the Web for communicating accounting information. First, the report communicates the same underlying information in different languages and under alternative reporting jurisdictions. Second, the site provides advanced analytical tools. While these tools are based on proprietary Microsoft technologies, they do provide an indication of how the Web can be used to package information in ways that the consumers of information are likely to find of value.

400 Apart from USA GAAP, Microsoft also reports under Australian, Canadian, German, French, Japanese, and UK GAAP. The summarised financial statements under each of these reporting regimes are shown in the appropriate language. Figure 14 shows the summarised financial statements for Microsoft in German and under German GAAP. The links to the other reporting regimes are also shown.

**Figure 14: Microsoft Corporation 1998 Annual Report in German and under German GAAP**

1998 annual report	bill's letter	what it means	financials														
earnings	<a href="#">highlights</a>	<a href="#">cash flows</a>	<a href="#">reports</a>														
stock information	<a href="#">income statements</a>	<a href="#">balance sheets</a>	<a href="#">subsidiaries</a>														
financial history	<a href="#">alternate views</a>	<a href="#">stockholders' equity</a>	<a href="#">directors+officers</a>														
analysis tools	<a href="#">discussion+analysis</a>	<a href="#">notes</a>	<a href="#">investor relations</a>														
investments+acquisitions	Choose a local language, currency, and accounting convention:																
speeches+articles	<a href="#">Australian</a>	<a href="#">Canadian</a>	<a href="#">Deutsch</a>														
sec filings	<a href="#">Français</a>	<a href="#">日本語</a>	<a href="#">UK</a>														
press releases	<p><b>Microsoft Corporation</b>  <b>Konzern-Gewinn- und Verlustrechnung</b>  <b>(nicht durch Abschlußprüfer geprüft)</b></p> <p>Für das Geschäftsjahr vom 1. Juli 1997 bis zum 30. Juni 1998  (In Millionen DM)</p>																
corporate information	<table border="1"> <tbody> <tr> <td>Umsatzerlöse</td> <td>25,005</td> </tr> <tr> <td>Betriebliche Aufwendungen:</td> <td></td> </tr> <tr> <td>Herstellungskosten der zur Erzielung der Umsatzerlöse erbrachten Leistungen</td> <td>2,149</td> </tr> <tr> <td>Forschungs- und Entwicklungskosten</td> <td>4,669</td> </tr> <tr> <td>Vertriebskosten</td> <td>6,125</td> </tr> <tr> <td>Allgemeine Verwaltungskosten</td> <td>777</td> </tr> <tr> <td>Sonstige Aufwendungen und Erträge</td> <td>413</td> </tr> </tbody> </table>			Umsatzerlöse	25,005	Betriebliche Aufwendungen:		Herstellungskosten der zur Erzielung der Umsatzerlöse erbrachten Leistungen	2,149	Forschungs- und Entwicklungskosten	4,669	Vertriebskosten	6,125	Allgemeine Verwaltungskosten	777	Sonstige Aufwendungen und Erträge	413
Umsatzerlöse	25,005																
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Forschungs- und Entwicklungskosten	4,669																
Vertriebskosten	6,125																
Allgemeine Verwaltungskosten	777																
Sonstige Aufwendungen und Erträge	413																

405 The Microsoft annual report also provides a set of analytical tools that enable the end-user to analyse the underlying financial statement data over several periods and in a variety of alternative ways. Figure 15 shows the range of analysis tools available on the site.

**Figure 15: Microsoft Corporation 1998 Annual Report Analysis Options**

**analysis tools**

**Microsoft Excel PivotTables**  
A PivotTable is an interactive table that quickly summarizes, or cross-tabulates, large amounts of data. To use the following two Microsoft Excel PivotTables, please download the [free Microsoft Excel Viewer 3.2](#) if you don't already have Microsoft Excel installed.

- [Financial History PivotTable](#) allows you to view and analyze historical Microsoft financial data. For example, you can look at income statement line items dating back to 1985.
- [Revenue PivotTable](#) lets you view and analyze Microsoft revenues by sales channel and product group in a whole new way. For example, you can look at platforms revenue in the Asia Region.

[FY 1999 "What-If" Financial Model](#)  
Do your own forecasting for Microsoft's FY 1999 income statements based on your assumptions. Here's the free [Microsoft Excel Viewer 3.2](#) if you don't have Microsoft Excel.

**FY 1998 Alternative Income Statements**  
View Microsoft income statements presented in local languages, currencies, and accounting conventions:

[Australian](#)  
[Canadian](#)  
[Français](#)  
[Deutsch](#)  
[United Kingdom](#)  
[日本語](#)

410 One of the analysis tools available to the user is to download the accounting history for selected Income Statement, Balance Sheet, and Cash Flow data points in a Microsoft Excel Pivot Table. As the name suggests, a Pivot Table is a 3 dimensional representation of data. Information in the table can be viewed as a temporal snapshot, or particular financial statement items can be tracked over different accounting periods. Figure 16 shows the displayed financial statement data for the four quarters in the 1998 financial year.

**Figure 16: Microsoft Corporation 1998 Annual Report - Data Pivot Table**

Fiscal Year	FY98			
Sum of Amount	Quarter			
Line Item	Q1	Q2	Q3	Q4
Revenue	3,130	3,585	3,774	3,995
Cost of revenue	(253)	(313)	(317)	(314)
Research and development	(567)	(627)	(597)	(711)
Acquired in-process technology	(296)			
Sales and marketing	(788)	(876)	(829)	(919)
General and administrative	(95)	(106)	(104)	(128)
Other expenses	(71)	(50)	(60)	(49)
<b>Operating income</b>	<b>1,060</b>	<b>1,613</b>	<b>1,867</b>	<b>1,874</b>
Investment income	142	157	190	214
Provision for taxes	(539)	(637)	(720)	(731)
<b>Net income</b>	<b>663</b>	<b>1,133</b>	<b>1,337</b>	<b>1,357</b>
Diluted earnings per share	0.12	0.21	0.25	0.25
Cash flow from operations	1,680	1,666	2,091	1,434

Microsoft also provides an Excel spreadsheet tool that allows users to make their own assumptions about key income statement drivers for the next reporting year. Based upon the chosen assumptions, a revised 1999 summarised income statement is generated. Figure 17 shows the dialogue box, where the users enter their assumptions for the chosen drivers.

**Figure 17: Microsoft Corporation 1998 Annual Report – What If? Analysis**

A forecast income statement is then generated, along with prior-year comparisons. Figure 18 shows the resulting projection for the 1999 financial year.

425

**Figure 18: Microsoft Corporation - Forecast Income Statement**

Microsoft Corporation Projection Template				Project FY99	
(In millions, except earnings per share)					
<a href="#">Go to Charts</a>	Year Ended June 30			Projected Growth June 30	
	1996	1997	1998	1999	Change
Revenue	\$8,671	\$11,358	\$14,484	\$15,932	10%
Operating expenses:					
Cost of revenue	1,188	1,085	1,197	1,275	6%
Research and development	1,432	1,925	2,502	3,253	30%
Acquired in-process technology	--	--	296		
Sales and marketing	2,657	2,856	3,412	4,094	20%
General and administrative	316	362	433	476	10%
Other expenses	19	259	230	320	39%
Total operating expenses	5,612	6,487	8,070	9,418	17%
Operating income	3,059	4,871	6,414	6,515	2%
Interest income	320	443	703	900	28%
Income before income taxes	3,379	5,314	7,117	7,415	4%
Provision for income taxes	1,184	1,860	2,627	2,224	(15)%
Net income	2,195	3,454	4,490	\$ 5,190	16%
Diluted earnings per share *	\$ 0.43	\$ 0.66	\$ 0.84	\$ 0.94	13%
Weighted average shares outstanding *	5,123	5,243	5,362	5,500	

\* Restated to reflect a two-for-one stock split on March 29, 1999

## 1.5 CONCLUSION

This chapter reviewed the emerging state of business reporting via the Web as well as its impetuses, its prospects and its implications for accounting standard setting. At both the macro and micro levels, business reporting on the Internet is very beneficial to businesses. At the micro-level, it can reduce the cost of business reporting, make instantaneous reporting a reality, add breadth and depth to business reporting, allow use of analytical tools



on the underlying business data, and enhance the penetration of reports to anywhere in the world where there is a computer.

- 435 At the macro level, business reporting on the Internet is a boon for the globalisation of business because it can yield benefits for both the business concerns and its customers. However, the multidimensionality of this new reporting raises new issues and dimensions to reporting that have not been conceived of previously. Some of the issues raised in the chapter will fall into the jurisdiction of accounting standard setters at the global level.
- 440 Therefore, this report is meant primarily for the IASC and secondarily for other agencies such as IFAC, IOSCO, and the country-based accounting standard setters and securities and corporate regulators.

## 2 TECHNOLOGICAL OPPORTUNITIES

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### 2.1 INTRODUCTION

445 A discussion of Web-based business reporting is incomplete without reference to the nature and use of associated technologies. In this chapter, we review both existing and new technologies that can be used for Web-based business reporting. Specifically, this chapter discusses the following technologies, in three logical technology groupings:

#### *Static Representation of Information*

- 450
- CD-ROM
  - Electronic paper
  - HTML

#### *Multimedia Enhancements*

- 455
- Plug-ins
  - Multimedia
  - 3D
  - Push

#### *User Interaction and Knowledge Management*

- 460
- Databases
  - Search tools and metadata
  - JavaScripts, Java, and Active/X
  - Intelligent agents
  - Extensible markup language (XML)

### 2.2 CD-ROM

465 **Technology Overview:** The CD-ROM provides a low cost medium for the distribution of large quantities of information since each CD-ROM can store 0.65GB of data. Given that the CD-ROM drive is directly connected to the computer, multimedia files load quickly compared with downloading them over the Internet. Importantly, CD-ROMs have high temporal stability.

470 **Use in Business Reporting:** In the early 1990s a small number of corporations, most notably IBM Corporation, experimented with CD-ROMs for the distribution of accounting information. Typically, the CD-ROM included copies of the printed financial statements as

well as multimedia files such as video files. Corporations took the opportunity to supply multimedia productions about their corporations.

475 **Issues:** Although CD-ROM is actually an alternative medium to the Internet, it was  
included in the report because it was an early attempt to breakout of the paper paradigm.  
The CD-ROM seems to have essentially disappeared as a medium for the dissemination of  
accounting information. While a CD-ROM is, in many cases, cheaper to produce and  
480 distribute than a printed annual report, it must still be distributed by physical means.  
Companies must know the names of the recipients and there are delays in the distribution of  
CD-ROMs. Further, in an office environment, sharing of CD-ROMs is clumsy and  
expensive. So, for a variety of reasons it did not succeed, however much of what was  
learned in terms of human interface issues and multimedia presentation did provide  
valuable insights to Web designers facing many of the same issues.

### 485 2.3 ELECTRONIC PAPER

**Technology Overview:** There are a number of technologies that allow the ready conversion  
of existing print documents into electronic versions. The resulting “electronic paper” can  
then be read on the computer screen, albeit with some difficulty as the dimensions of the  
printed page do not normally correspond with those of the computer screen. Of course, the  
490 documents can be printed to paper for offline reading and archiving. The best-known  
product of this type is Adobe’s Acrobat, which is based upon Adobe’s PostScript  
technology. The Acrobat reader allows the user to read the Acrobat pages directly within  
their Web browser, as well as send the pages to their printer. A few corporations also use  
Microsoft’s “Word” word processing files and Microsoft’s “Excel” spreadsheets as  
495 alternatives to Acrobat to communicate information on the Web.

**Use in Business Reporting:** Electronic paper is an alternative means of distributing the  
annual report to information consumers across the Web. With products such as Adobe  
Acrobat, the printed report can be distributed in electronic form in exact conformance to the  
paper version. A large number of corporations now use Adobe Acrobat to provide  
500 electronic versions of their printed reports<sup>35</sup>. It is very inexpensive for companies to  
produce an Adobe Acrobat version of a printed report and to provide the report in this form  
via their Web site.

**Issues:** Electronic paper reinforces the “place” of the financial report because the on-screen  
representation looks exactly like the printed document. However, on-screen reading of  
505 electronic paper is normally an unsatisfying experience. Not only do the dimensions of the  
printed page and the computer screen differ, but also annual reports are typically formatted  
in columnar fashion making movement around the page more difficult. It is likely that most  
users print the reports rather than reading them on screen.

Acrobat files are also relatively large. For example, the 1998 annual report of General  
510 Motors in Adobe Acrobat format is 4mB and that of Deutsche Telekom AG is 5.4mB.  
These take a longer time to download using even a 56kb modem connection than most  
users are prepared to spend<sup>36</sup>.

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<sup>35</sup> See Chapter 3 for details of distribution in 22 countries.

<sup>36</sup> See usability engineer Jakob Nielsen’s overview on download times at [www.useit.com/alertbox/9703a.html](http://www.useit.com/alertbox/9703a.html)

Electronic paper has several other issues. Inclusion of hypertext links within the electronic page is difficult, thereby losing the power of hypertext navigation. Adobe Acrobat files are also not indexed by any of the major search engines. Acrobat does not provide any semantic representation of the underlying information structures in the accounting reports. Before the Adobe Acrobat reader can be used, it must first be downloaded and installed on the user's computer. This is not an easy task for many novice computer users. Finally, Adobe Acrobat is a proprietary standard, controlled by Adobe Corporation. Whilst Adobe's reader is currently free, there is no certainty that this will continue to be the case. The development of the Portable Document Format (PDF), Adobe's specification for Acrobat documents, is completely managed by Adobe. The trend in Information Technology (IT) is away from proprietary and towards open standards.

## 2.4 HTML

**Technology Overview:** The HTTP<sup>37</sup> protocol sets out a standard method by which one computer (the *client*) can use a browser<sup>38</sup> to communicate with another computer (the *server*) where information is stored. The HTTP protocol is a relatively simple protocol where the client computer does a *handshake* (exchanges initial identification and protocol information) with the server, requests transfer of information and then disconnects after the transfer has been completed.

For the Web, the information exchanged using this protocol is usually created using a 'mark-up' language called Hypertext Mark-Up Language (HTML). This language is used to add information to the content of a 'page' to describe how it should appear to the recipient, e.g., what text should be header information, what should be in bold or italics, where paragraphs should end etc.

The client relies on the browser to interpret the HTML layout language to display information to the end-user. HTML<sup>39</sup> is a subset of the ISO-standard SGML<sup>40</sup>. HTML is the *lingua franca* of the Web. HTML uses hypertext concepts to support on-screen navigation through links between any "page" and any other linked "page." HTML pages can link to several protocols other than HTTP including FTP (File Transfer Protocol), telnet (remote access to computers) and RealPlayer sound and video files. HTML files can be interpreted by a wide range of computers from Unix workstations, PCs, Macintoshes to Personal Digital Assistants (PDAs) such as the Palm Pilot.

**Use in Business Reporting:** As we set out in the next chapter, there are many corporate Web sites that use HTML to report accounting and related information. The use of hyperlinks provides navigation between the various pages of the financial report. A good example of a complete set of reporting of both financial and non-financial information is by Coles Myer Limited of Australia<sup>41</sup>. A well-organised<sup>42</sup> investor relations page provides

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<sup>37</sup> HyperText Transport Protocol.

<sup>38</sup> Well-known examples of browsers include Netscape's Navigator and Microsoft's Internet Explorer.

<sup>39</sup> For an overview of HTML at the World Wide Web Consortium ([www.w3.org/MarkUp](http://www.w3.org/MarkUp)).

<sup>40</sup> Standard Generalized Markup Language.

<sup>41</sup> [www.colesmyer.com.au](http://www.colesmyer.com.au)

<sup>42</sup> The displayed page is the graphics version. There is also a text-only version of the corporate Web site that loads much more quickly is also provided.

550 quick access to an “annual review” and the financial statements as well as links to other corporate information and an investor relations FAQ (Frequently Asked Questions) page.

**Figure 19: Coles Myer Investor Relations Page**



555 The “Annual Review” page provides links to information on the products, divisions and brands as well as information on corporate governance, statutory information and summary financial information. It provides a “one stop shop” for current and potential investors.

**Figure 20: Coles Myer – Annual Review**



560 The design of hypertext is to support movement between linked pages, which can significantly enhance the navigation between elements of a Web-based annual report. The most obvious application of hypertext within the annual report is in the linking of specific

elements in the financial statements and their applicable notes. This can be taken further of course, as links can be made between the financial statements and other parts of the report (e.g., highlights, chairman’s statement, auditor’s report, MDA or Directors’ Report). Further, there can be links between the financial statements and elsewhere on the corporate Web site outside of the annual report. As an example of such usage, the Coles Myer financial statements provide a detailed table of contents to each element of the financial statements including each of the notes to the financial statements.

Figure 21: Coles Myer – Financial Statements Table of Contents

The screenshot shows the 'Investor Information' page for Coles Myer. It features a navigation menu on the left with links such as 'Home', 'About Coles Myer', 'The Community Our Business', 'Investor Information', 'FAQ', 'Investor Information', 'Discount Card', 'Company Profile', 'Annual Reports', 'Half Year Reports', 'ASX News Release', 'Company Presentations', 'AGM Reports', 'Key Dates', 'Dividends', 'Five Year Comparison', 'Governance', 'Credit Ratings', 'Directors/Management', 'Key Contacts', 'ASX, NYSE & Share Registry Links', and 'Email Investor Relations'. The main content area is titled 'Investor Myer Information' and includes sections for 'Operating and Financial Review', 'Notes to the Financial Statements', and a detailed list of notes such as 'Summary of Significant Accounting Policies', 'Operating Revenue', 'Operating Profit', 'Abnormal Items', 'Net Finance Expense', 'Income Tax', 'Dividends', 'Receivables (Current)', 'Other Assets (Current)', 'Receivables (Non-Current)', 'Investments', 'Property, Plant and Equipment', 'Intangibles', 'Other Assets (Non-Current)', 'Accounts Payable', 'Provisions (Non-Current)', 'Share Capital', 'Reserves', 'Auditors' Remuneration', 'Segment Performance', 'Particulars in Relation to Controlled Entities', 'Interests in Associated Unit Trusts and Partnerships', 'Employee Share Plan', 'Superannuation Funds', 'Lease Expenditure Commitments', 'Capital Expenditure Commitments', 'Contingent Liabilities', 'Directors' and Executives' Remuneration', 'Related Party Information', and 'Financial Instruments Disclosures'.

The elements of the financial statements are laid out in well-structured pages with financial information in easy to read tables. Part of the Statement of Cash Flows is shown in Figure 22:

Figure 22: Coles Myer – Part of Cash Flow Statement

The screenshot shows the 'Statements of cash flows' section of the Coles Myer financial statements. The table is titled 'Coles Myer Ltd.' and 'Statements of cash flows'. It compares the performance of the CML Group and CML for the 52 weeks ended 26 July 1998 (1998) and 27 July 1997 (1997). The table is structured as follows:

		CML Group		CML	
	Explanatory notes	1998 \$M	1997 \$M	1998 \$M	1997 \$M
<b>Cash flows from operating activities</b>					
		<b>Inflows/(Outflows)</b>		<b>Inflows/(Outflows)</b>	
Receipts from customers		20,596.6	19,233.8		
Payments to suppliers and employees		(19,333.4)	(18,225.4)	(114.5)	(74.3)
Interest received		12.0	19.1		
Interest and other costs of finance paid		(122.9)	(138.3)		
Income tax (paid/refund)		(96.9)	(4.9)	1.6	(18.5)
<b>Net cash provided by/(used in) operating activities</b>	<b>A</b>	<b>985.4</b>	<b>784.3</b>	<b>(112.9)</b>	<b>(92.6)</b>
<b>Cash flows from investing activities</b>					

575 **Issues:** While HTML reports are relatively easy to read on screen<sup>43</sup> and can use hypertext  
links to support ready navigation around the reporting site, there are a number of issues in  
the use of HTML for financial reporting. The most immediate difference between a paper  
annual report and a Web-based annual report is that the former is a discrete document while  
580 the latter is usually a smaller embedded part within a large corporate Web site. That is, a  
Web-based annual report is frequently one small element of a wider corporate identity that  
might include product details, press releases, sales databases, contact information and  
corporate plans. Corporations normally apply a corporate “look and feel” to the complete  
Web site. Tools, such as site maps and indexes, support navigation to overcome the “lost in  
cyberspace” feeling that is so common in a hypertext environment. The pages are usually  
585 designed to provide a consistent visual experience for the information consumer. Under  
these circumstances, the Web-based annual report may not have a discrete visual identity.  
There may not be clear indications that identify the boundaries of the annual report.

Of course, there is nothing preventing a company from clearly demarcating what is inside  
and what is outside the annual report. Intel Corporation, for example, had a distinct blue  
590 border on the left side of every annual report page for their 1996 annual report. When the  
user clicked on a hypertext link that would move the user outside the annual report, a  
warning screen automatically appeared to tell the user they were leaving the annual report.  
The blue border has gone from the current report, but the warning that the user is leaving  
the annual report site remains. These tools help to build a clear sense of “place.”

595 While links in HTML documents are created from relatively simple technologies, they have  
the power to significantly change the experience of reading the ‘document’. By giving the  
reader the capacity to depart from a linear review of materials and select from a wide array  
of related materials, hypertext can be highly productive, but it can also lead to confusion  
and inefficiency. For example, most hypertext users have experienced the feeling of “how  
600 did I get here”?

In sum, hypertext linkages enable readers to acquire a large volume of related information  
efficiently. At the same time, however, the linkages may create confusion about the  
boundaries and scope of the annual report and the associated auditors’ report<sup>44</sup>. It can also  
be difficult to achieve a comprehensive presentation of facts in this way, as users may not  
605 fully navigate all desired routes through the hypertext.

A second issue with HTML is its weak support for printing. Most financial reporting Web  
sites are designed for users to read on computer screens. When printing a page, the  
supporting Web navigation tools and banners as well as the main text and graphics of

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<sup>43</sup> Research shows, however, that reading on-screen is less productive than from paper. Issues of hypertext connectivity, information integration etc relate to ease of access to information rather than ease of reading.

<sup>44</sup> There is much research on navigation strategies, hyperspace disorientation and appropriate design of Web sites. See for example: Jonassen, D. J., and Grabinger, R. S. (1990) ‘Problems and Issues in Designing Hypertext/Hypermedia for Learning’ in D. J. Jonassen & H. Mandl (eds), *Designing Hypermedia for Learning*. Berlin: Springer-Verlag, pp. 3-25; Thuring, M., Hannemann, J., and Haake, J. M. (1995) ‘Hypermedia and cognition: Designing for comprehension’, *Communications of the ACM*, 38(8): 57-66.; Edwards, D., and Hardman, L. (1990) ‘Lost in hyperspace: cognitive mapping and navigation in a hypertext environment’ in R. McAleese (ed), *Hypertext: State of the Art*. Oxford: Intellect, pp. 105-125.; Nielsen, J. (1990) *Multimedia and Hypertext, The Internet and Beyond*. SunSoft: Mountain View. ; Nielsen, J. (1999) *Designing Web sites with Authority: Secrets of an Information Architect*. New York: New Riders Publishing. In accounting, see Driscoll, D., Arney, J., Debreceny, R., and Gray, G. (1999). *Designing the Next Generation of Financial Reporting Web Sites*. Paper presented at the 11th Asian-Pacific Conference on International Accounting Issues, Melbourne, Australia. .

interest will print. Hence, many printed HTML pages can look very cluttered. Further, unless free tools such as Hewlett Packard's WebPrint<sup>45</sup> are used, a user must laboriously go from page to page and print each page as a separate document. Tables are typically arbitrarily spread over page breaks. There is no printed table of contents. The use by Web site designers of frames<sup>46</sup> often means that it is very difficult to know the exact URL<sup>47</sup> of particular information on the Web site. While the W3 Consortium has made much progress on Style Sheets<sup>48</sup> and many corporations are now providing "printer friendly" versions of pages, support for printing of HTML pages does not approach that provided by electronic paper in general, and Adobe Acrobat in particular.

Saving HTML pages is also problematic. The "page" that the user sees on his or her browser is really a compound document that can be assembled from many separate files. That is, there is the main HTML document that includes the text and tags to assembly and format the page. Each graphic, whether a photograph, a button, a map or whatever, is a separate file. The browser brings all these text and graphic files together and overlays the graphic files onto the HTML page. In general, if the user uses the Save choice on the browser's File menu, all that is saved is the HTML page without any of the graphics. The first time a user subsequently retrieves the saved file from the local disk, he or she is surprised (and disappointed) that the graphics are not there. Fortunately, the latest browsers have the option to save the "complete" page, but not all users have the latest browsers or know of the options.

Finally, HTML provides very limited semantic representation of information contained on the page. A principal reason for the success of HTML was its limited tagset<sup>49</sup>. Pages could be readily constructed by users with little or no formal training. The HTML tags are almost entirely related to display instructions (e.g., `<h1>` for heading, `<i>` for italics, `<table>` and so on), and HTML does not provide tags to allow users to distinguish specific data items within pages such as the value for "Minority Interests", or "Operating Cash Flows" or other attributes.

## 2.5 PLUG-INS

**Technology Overview:** When first released, the HTML language allowed only simple textual representation and basic graphic capability. Subsequently, Web browser developers, and others, created so-called "plug-ins" to add functionality to the basic browser to enable it to efficiently handle a wider range of data types. An example of a 'plug-in' is "Shockwave"

<sup>45</sup> This product is designed to assemble a "collection" of Web pages together and print the collection as single, integrated document.

<sup>46</sup> Frames are a feature of HTML that was introduced by Netscape Corporation. The page designer can divide the screen up into multiple sections. Often, poor Web site design means that the URL of the particular page (e.g., Balance Sheet) is hidden. Those pages cannot then be bookmarked and, when the page is printed, the URL is not correctly displayed. Frames have now been incorporated into the formal HTML specification.

<sup>47</sup> Universal Resource Locator. A standard method of identifying all types of Internet resources. Typical URLs are "www.w3.org/" and "telnet:melvyl.ucop.edu".

<sup>48</sup> A style sheet is a reference point for the browser to understand how to interpret and represent the page on-screen and on print. The current style sheet standard for HTML is Cascading Style Sheets release 2.0 (CSS2.0). We return to the question of style sheets in our discussion of XML and other related technologies, below. See [www.w3.org/Style/](http://www.w3.org/Style/)

<sup>49</sup> A tagset is a set of the tags used in the markup language. For example, in HTML, a level one header is tagged with a "h1" tag. For example, the browser knows that `<h1>This is the Level One Heading</h1>` because it is surrounded by the opening `<h1>` and closing `</h1>`.



from Macromedia, which allows animation created in Macromedia's Director program to be incorporated into Web sites. There are now more than 150 such plug-ins for Netscape and Internet Explorer<sup>50</sup> and many of these are freely available to download over the Internet or are now available with the main browser program such that the user is frequently  
645 unaware of the plug-in's separate existence.

**Use in Financial Reporting:** A number of financial reporting Web sites use plug-ins. The most popular are Macromedia's Shockwave and Flash graphics plug-ins. Adobe Acrobat is also available as a plug-in, so that Acrobat files can be viewed from within the browser.

**Issues:** While each plug-in enhances the user experience, they often must be downloaded  
650 separately from a Web site before they can be used. Not every user of the Web will have the expertise to successfully complete a download and complete the subsequent installation of the plug-in, while other users may simply not wish to go through the downloading process. This leads to a limitation in the number of users who will be able to access data that needs  
655 these programs to be visible to the user and, therefore, limits the general accessibility of some information. This limits the utility of financial reporting sites that have been enhanced by a particular plug-in. Further, plug-ins are typically proprietary and not open standards.

Plug-ins are also a computer security risk. With plug-ins, when users click on links to files that requires plug-ins, the plug-ins will automatically launch. If the file has a virus or Trojan horse, the fact that the program automatically starts executing could seriously  
660 damage the user's computer.

## 2.6 MULTIMEDIA

**Technology Overview:** There are a number of multimedia technologies on Web sites. For example, there are of the order of 20 different approaches to the compression and/or streaming<sup>51</sup> of audio across the Internet. The best known of these technologies is  
665 RealPlayer<sup>52</sup>, Microsoft's Media Player<sup>53</sup> and, more recently, Apple's QuickTime<sup>54</sup>. RealPlayer's combined audio/video compression and streaming product is now used by hundreds of traditional radio and news stations for placing their content on the Internet. RealPlayer works satisfactorily across a relatively slow dial-up link to the Internet. With an appropriate high-speed connection it can also stream CD-quality, stereophonic audio.  
670 Streamed video is also now available and widely used. Improvements in technology now allow "keyhole" (or miniature) video windows to be streamed to a user with a modern computer and a 56kbps modem, which are the fastest generally available modems at present, at 10-15 frames per second<sup>55</sup>. The RealPlayer and Windows Media Player products are the current leaders in this technology along with Apple's QuickTime with its extensive  
675 roots in asynchronous multimedia.

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<sup>50</sup> See [www.netscape.com/plug-ins/](http://www.netscape.com/plug-ins/)

<sup>51</sup> Streaming allows the client to commence displaying or replaying the resource prior to the complete transfer of the resource to the client from the server.

<sup>52</sup> [www.real.com](http://www.real.com) - latest version is Player G2.

<sup>53</sup> [www.microsoft.com/windows/mediaplayer](http://www.microsoft.com/windows/mediaplayer) - latest version is version 6.01.

<sup>54</sup> [quicktime.apple.com](http://quicktime.apple.com) - latest version is version 4.0.

<sup>55</sup> Conventional film is typically displayed at 24 fps.

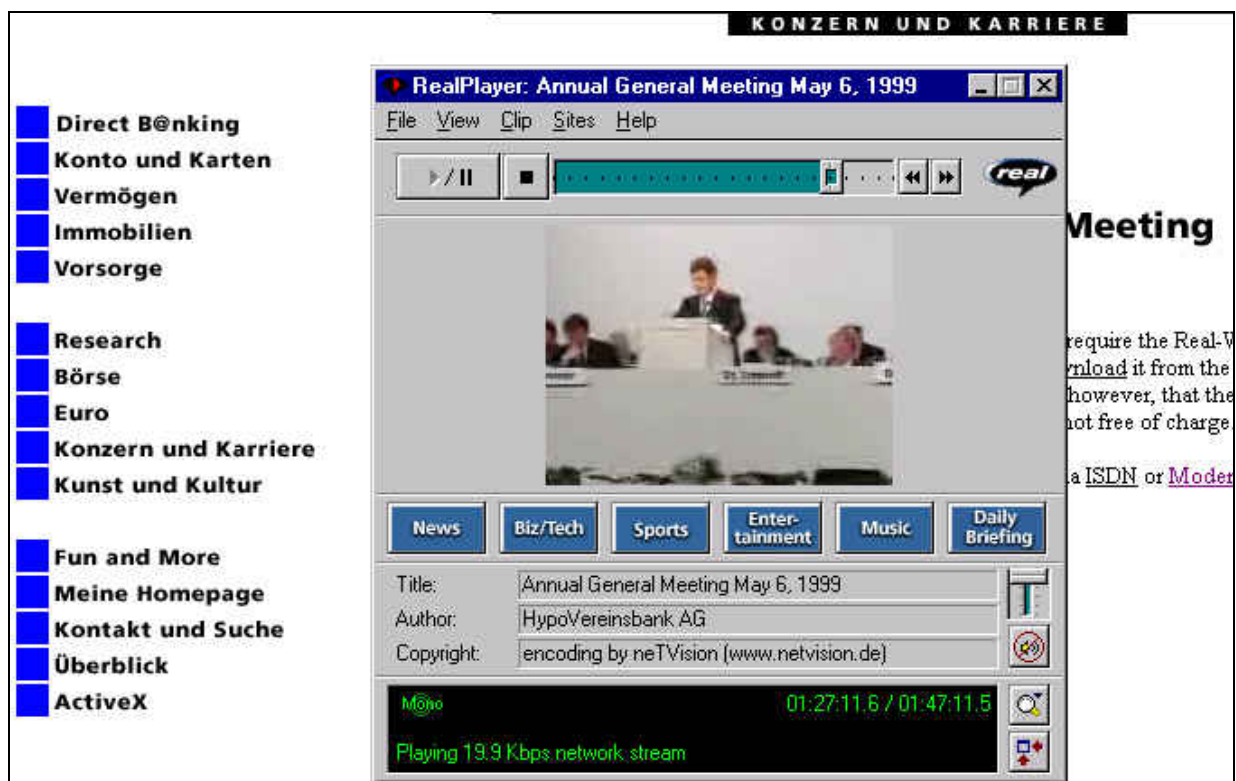
**Use in Business Reporting:** Streaming audio and video enables companies to distribute annual meetings, profits announcements, and analyst briefings on the Web in real-time. This largely removes concerns with potential breaches of fiduciary responsibilities to shareholders or insider trading by analysts, as the market would be informed at the same time as the briefing was taking place.

680

The Internet audio and video content consolidator, Broadcast.com<sup>56</sup>, has entered into a trial with the USA securities exchange, NASDAQ, to broadcast quarterly earnings calls in audio format. Increasing numbers of corporations are using this service. A smaller number of corporations are using RealVideo or QuickTime to distribute the annual and other corporate meetings. Figure 23 shows the RealVideo broadcast of the annual meeting of HypoVereinsbank AG<sup>57</sup>:

685

**Figure 23: Internet Broadcast of 1999 Annual Meeting of HypoVereinsbank AG**



**Issues:** Interactive multimedia, such as RealPlayer or QuickTime, presents many opportunities to present in-depth information to stakeholders. Making quarterly earnings calls available on the Internet significantly enhances the flow of information to a wider audience than was possible previously. It also allows for a different dimension to the presentation of information than is possible with data designed for paper-based or paper-like, 2D presentation. At the same time, such technology presents particular challenges. For example, multimedia cannot readily be indexed or incorporated into a broader information set. Since multimedia players act as plug-ins, the issues related to downloading and installing, and computer security risks also applies here.

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695

<sup>56</sup> [www.broadcast.com/business/](http://www.broadcast.com/business/)

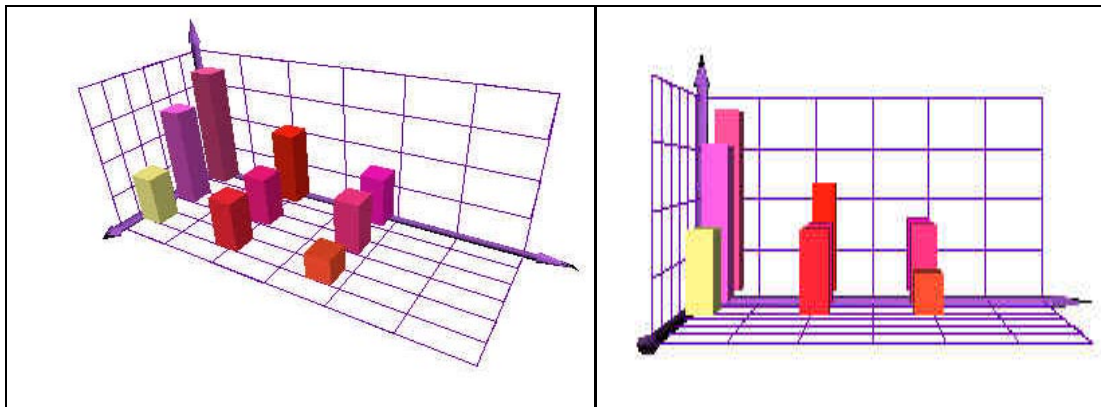
<sup>57</sup> [www.hypovereinsbank.de/](http://www.hypovereinsbank.de/)

## 2.7 3D

700 **Technology Overview:** A number of “3D” technologies are available including the so-called Virtual Reality Markup Language (VRML)<sup>58</sup> and Apple’s QuickTimeVR<sup>59</sup>. The 3D software allows developers to create a virtual reality site that can simulate for the user the experience of walking into and moving around in 3D space - like walking through a shopping mall past a variety of storefronts.

705 **Use in Business Reporting:** Multimedia brings a variety of information resources to Web annual reports that cannot be included within printed annual reports. A QuickTimeVR “movie” of a physical environment can provide a radically different user experience than a 2D picture. For example, a retail firm can provide a 3D “walkthrough” of a new store layout concept<sup>60</sup>. VRML can be used to provide a 3D view of financial statement relationships. An example is shown below:

710 **Figure 24: Alternative 3D views of the same data in VRML**



715 **Issues:** The use of 3D in business reporting Web sites is as yet unexplored. It provides functionality for understanding complex relationships that cannot readily explained by 2D diagrams or tables and, therefore, provides corporations with potentially useful presentation abilities. Viewing 3D files requires the appropriate 3D plug-in, therefore, the installation issues and security issues associated with plug-ins also applies to 3D technologies.

## 2.8 DATABASES

720 **Technology Overview:** The interconnection between Web pages and databases is well established. This relationship can range from simple retrieval of information from corporate databases, as when customers of TNT<sup>61</sup> or Federal Express<sup>62</sup> query the status of shipments or customers of Amazon Books<sup>63</sup> search for particular books, to the generation of tailored Web pages.

<sup>58</sup> [www.web3d.org/vrml/vrml.htm](http://www.web3d.org/vrml/vrml.htm)

<sup>59</sup> [www.apple.com/quicktime/qtvr](http://www.apple.com/quicktime/qtvr)

<sup>60</sup> See BMW’s Web site for an example of QuickTimeVR product placement.

<sup>61</sup> [www.tnt.com](http://www.tnt.com)

<sup>62</sup> [www.fedex.com](http://www.fedex.com)

<sup>63</sup> [www.amazon.com](http://www.amazon.com)

**Use in Business Reporting:** Many commentators as well as the AICPA's Special Committee on Assurance Services<sup>64</sup> have forecast that information consumers will directly interact with corporate accounting databases. The technology is relatively simple and well understood. There are a number of standard interfaces between HTML forms and a variety of databases including all major commercial relational databases.

**Issues:** A problem with the use of databases is that conventional Web search engines cannot see inside them. As such, these databases will not be listed in the results of a user's search. Computer security can also be an issue. If a user can access the accounting database to retrieve information, then there is the risk that with a poorly designed interface, the user could change the data. There are various techniques to reduce these risks such as firewalls, but the corporation must make sure that the techniques are properly implemented and tested.

## 2.9 SEARCH TOOLS AND METADATA

**Technology Overview:** In general, users are now well aware of search tools that interrogate full-text databases of HTML documents. This can range from simple, site specific search tools such as "SWISH" (Simple Web Indexing Systems for Humans) to large-scale indexing tools such as Compaq's AltaVista<sup>65</sup>, which indexes many, but by no means all, publicly available Web pages. As the number of pages indexed by a search engine such as AltaVista is now many tens of millions, searching for a general concept typically returns thousands of responses, thereby, resulting in low usability. With existing search engines it is rarely feasible to find a single page that meets particular search characteristics (e.g., "find me Hagemeyer's Statement of Cash Flows" for the year to 31 December 1998").

The inability of search engines to find particular pages is caused by the absence of good metadata – data about the data on the page. HTML makes limited provision for metadata with the META tag. There are a variety of developments underway to agree on metadata concepts to clearly identify the content of Web pages – most notably within the "Dublin Core"<sup>66</sup> group and in the W3 Consortium<sup>67</sup>.

**Use in Business Reporting:** The use of META tags in general will help search engines locate information. The use of an agreed-to set of META tags (e.g., always use the term Statement of Income) would make the search even more efficient.

**Issues:** Research shows that financial reporting pages are effectively impossible to find with current full-text indexes such as AltaVista because corporate use of existing META tags is limited and spotty<sup>68</sup>. Search engine technology for indexing of the Web has not yet reached the stage where the necessary level of utility is available. The issue of *resource*

<sup>64</sup> [www.aicpa.org/assurance/scas/index.htm](http://www.aicpa.org/assurance/scas/index.htm)

<sup>65</sup> [www.altavista.com](http://www.altavista.com)

<sup>66</sup> See [purl.org/dc/](http://purl.org/dc/)

<sup>67</sup> See [www.w3.org/Metadata/](http://www.w3.org/Metadata/)

<sup>68</sup> Research on finding Web pages and usage of META tags, and uses of metadata are fully canvassed in Debrecey, R., Gray, G., and Barry, T. (1998). *Accounting Information in a Networked World - Resource Discovery, Processing and Analysis*. Paper presented at the American Accounting Association Annual Meeting, New Orleans.

760 *discovery* – the ability to find information on the Internet – is critical to the successful migration of accounting information from existing paper based means of information dissemination to electronic dissemination.

## 2.10 JAVASCRIPT, JAVA AND ACTIVE/X

765 **Technology Overview:** HTML was not designed to be an active computer language. It was designed as a tool that would allow device independent enhancement and display of ASCII text. In the early years of the Web, browsers such as Mosaic had limited built-in functionality. The browser had to send all information to the server for processing and received a new Web page in response. Today's Internet is characterised by browsers running on high performance personal computers but still communicating with servers over limited bandwidth communication links. In this environment, leaving the browser largely "dumb" and putting all the intelligence into the Web server did not make sense. For a number of purposes, local processing by the browser is appropriate. We have seen, then, the development of a low-level scripting language, JavaScript as well as a high-level Internet-based object-oriented programming language, such as Java and an Internet equivalent of Microsoft's Visual Basic applications, Active/X.

775 JavaScript applications can undertake a number of different tasks. They can add a variety of interactions to a Web page. JavaScript can also be used to provide validity checking on Web forms, before they are sent to the HTTP server.

780 Java is a full-scale object-oriented programming language, based loosely on the C++ language. Unlike JavaScript, where the code is either embedded inside an HTML page or is drawn from a library of code when the HTML page is retrieved from the server, Java "applets" are complete programs.

785 **Use in Business Reporting:** Providing interactivity within Web-based annual report pages can greatly enhance the user experience. An array of both public domain and commercial Java applets are available. Sun's Java Commerce Toolkits<sup>69</sup> provides a brokerage for the exchange of Java applets that are applicable in financial settings. Pre-built Java applets can be purchased that provide functionality such as simple spreadsheets, statistical routines and numerous graphs. A third party Java applet spreadsheet can allow users to draw selected data from the accounting database and manipulate the results using their own assumptions. Another Java applet might enable information consumers to display charts of their own choice, again drawing information from a database of accounting data.

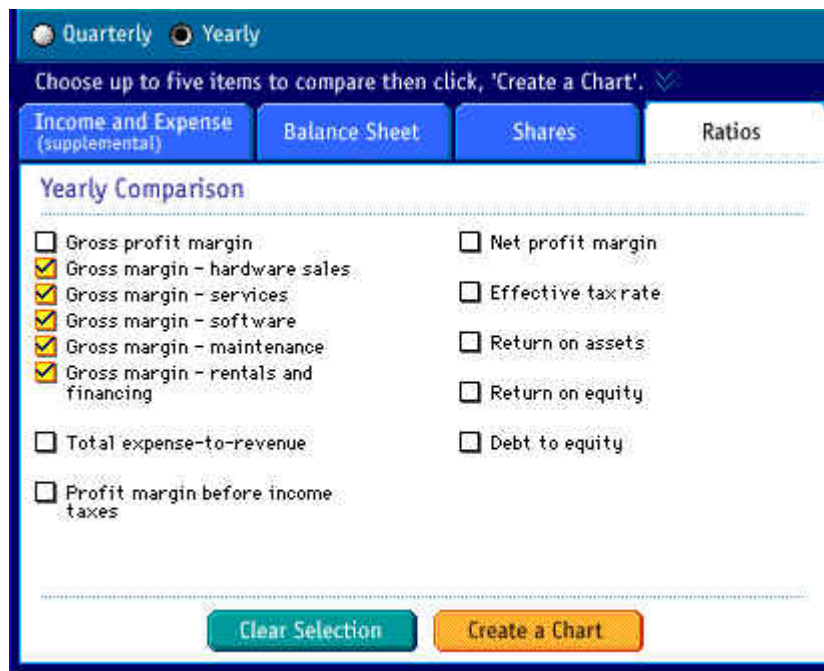
790 An example of use of both JavaScript and Java is by IBM in their 1997 Annual Report. The online report allowed users to graph results for a number of Income Statement and Balance Sheet items and to display the results either by quarter or by year. Figure 25 shows the selection dialogue box for tracking important ratios over a number of years. JavaScript is used to handle the ticking of the "tick boxes."

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<sup>69</sup> - [java.sun.com/products/commerce](http://java.sun.com/products/commerce) - other similar examples include the Financial Management Framework for Java (JFMF) - [www.livebiz.com/jfmf](http://www.livebiz.com/jfmf)

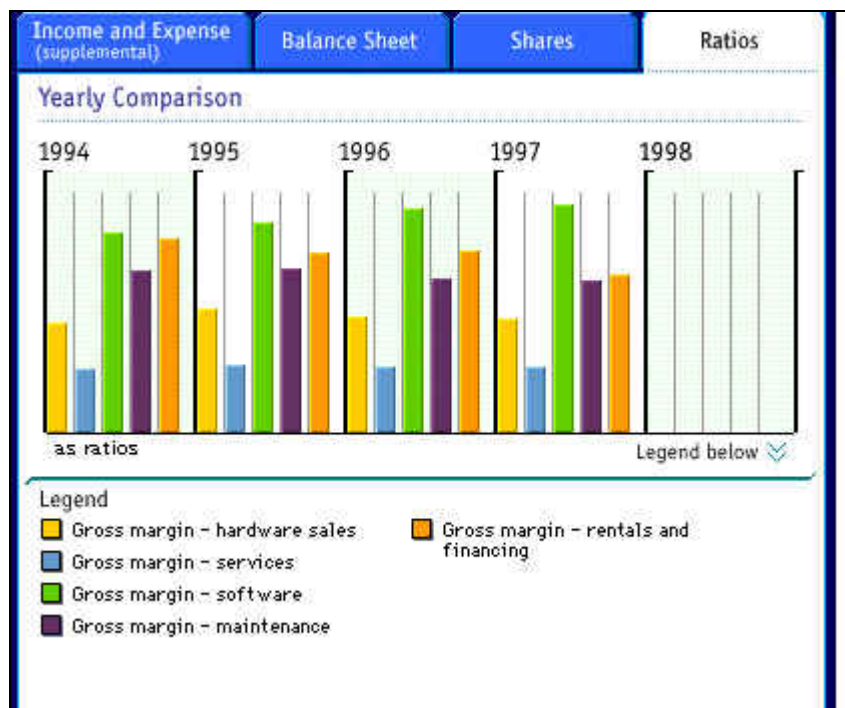
795

**Figure 25: IBM Corporation – Use of Java and JavaScript (1)**



The graph shown in Figure 26 is then displayed:

**Figure 26: IBM Corporation – Use of Java and JavaScript (2)**



800

**Issues:** The Internet provides an interactive environment in which end-users can tailor the output from a Web site(s) in a manner that suits their decision-making models. The impact of such interactive tools is an as yet unresolved issue for standards setters.

805 These application programs can also be major computer security risks by providing what is referred to as “security holes.” That is, these languages provide a means for an outsider to invoke system level commands (e.g., “erase C:”). As such, the design and command-capturing aspects of any application must be carefully tested.

## 2.11 PUSH

810 **Technological Overview:** The Web was designed as a “pull” technology<sup>70</sup>. As users encounter information needs, they can seek out particular HTML pages and “pull” those pages from the remote servers to their local client browsers. While entirely appropriate for a wide range of information search activities, “pull” is limited to the users’ abilities to recognise their need for information, remember where the information is stored, and retrieve it. Thus, pull technologies lead to an incomplete model of information gathering.

815 People in a pre-networked world use both “pull” and “push” technologies to gather information. When they made a visit to the library to research a particular topic, they would be displaying “pull” characteristics. When they subscribed to professional or academic journals, they would be displaying “push” characteristics. The journals take an information filtering and organising role. Management accountants would, for example, subscribe to management accounting journals and might not subscribe to finance journals. The  
820 management accounting journals are “pushed” to the subscriber and will contain some articles that are of interest to each subscriber and some that are not.

The oldest example of Internet push technology is email, which remains an important conduit for rapid and cheap distribution of knowledge to a predefined audience. There are a number of newer examples of Web-based push technologies, the best known of which are  
825 PointCast<sup>71</sup> and Marimba<sup>72</sup>. These services allow the information consumer to establish a profile of information needs. Then as vast amounts of information come into an information distributor such as PointCast it is filtered against each user’s profile and only the appropriate information is subsequently pushed to each user.

830 **Implications for Business Reporting:** With traditional print-based corporate reporting, it is too expensive to distribute more than the annual report and quarterly reports to all shareholders. Push technology, as with all Internet technologies, radically changes the economics of information distribution. At the simplest level, a Web form can be used to collect the email addresses of interested shareholders, customers, suppliers or interested Web surfers. Corporate press releases, quarterly results, and new product information can  
835 all be pushed to the email list at effectively zero cost.

When there is more widespread adoption of push technologies, such as Marimba, information consumers can subscribe to a corporate Web site that will then push the requested information to the consumers. The information can be distributed at off-peak

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<sup>70</sup> Kendall and Kendall, 1999 see pull as users “grabbing and yanking something from the Internet”. Push, conversely, is where the information provider sends content or an application to the user. See Kendall, J. E., and Kendall, K. E. (1999) ‘Information Delivery Systems: An Exploration of Web Pull and Push Technologies’, *Communications of the Association for Information Systems*, 1(14).

<sup>71</sup> [www.pointcast.com](http://www.pointcast.com)

<sup>72</sup> [www.marimba.com](http://www.marimba.com)

840 times. As the data are stored on the information consumer's computer hard disk, there is no network latency and information can be retrieved very quickly.

**Issues:** Push technology uses a lot of bandwidth. Many organisations discourage their personnel from subscribing to push technologies since they create a lot of incoming Internet traffic, which in turn slows down communication links inside the organisations.

## 2.12 INTELLIGENT AGENTS

845 **Technological Overview:** A new generation of software, referred to as “intelligent agents”, is becoming available that will complement human analyses and provide further support for the decision making processes of data users<sup>73</sup>. An intelligent agent, which is built upon long-standing research in artificial intelligence, is software that undertakes predetermined tasks in an independent fashion. The agent will react to its external environment in a quasi-intelligent fashion. A hypothetical task for an agent might be “observe the book-to-bill ratio for [a company] and advise me when the ratio moves more than one standard deviation from the average of the company and its peers.” The Internet is, as Baldwin and Williams (1999) note, “a natural environment for [intelligent] agents.”

855 **Implications for Business Reporting:** Intelligent agents are playing an increasingly important role in Internet-based eCommerce. While there are no fully-fledged intelligent agents in the accounting domain, there are two projects – both based upon the EDGAR database – that provide a foretaste of intelligent agent technology. They are the FRAANK project from Rutgers University and the University of Kansas,<sup>74</sup> and EdgarScan from PricewaterhouseCoopers<sup>75</sup>. Figure 27 shows the FRAANK analysis of a quick ratio.

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<sup>73</sup> For a general discussion of agents, see Genesereth, M. R., and Ketchpel, S. P. (1994) ‘Software agents’, *Communications of the ACM*, 37(7): 48-53.; Brenner, W., Zarnekow, R., and Wittig, H. (1998) *Intelligent Software Agents: Foundations and Applications*. Berlin: Springer-Verlag TELOS.; Jennings, N. R., and Wooldridge, M. J. (eds). (1998) *Agent Technology Foundations, Applications, and Markets*. Berlin: Springer-Verlag. In accounting, see Baker, W. M., and Witmer, P. R. (1997) ‘Intelligent agents go to work for management accountants’, *Management Accounting*, 78(10): 32-35. Baldwin, A., and Williams, S. (1999) ‘The Future of Intelligent Internet Agents in European Financial Reporting’, *European Accounting Review*, Vol. 8 No. 2. An example of a nascent intelligent agent is ShopBot ([www.shopbot.com](http://www.shopbot.com)). Price comparison tools such as C|Net's Shopper.Com ([www.shopper.com](http://www.shopper.com)) while not using formal artificial intelligence techniques, provide examples of the role of analytical tools that intelligent agents will fulfil.

<sup>74</sup> See [lark.cc.ukans.edu/cgiwrap/sirvastava/agent.cgi](http://lark.cc.ukans.edu/cgiwrap/sirvastava/agent.cgi)

<sup>75</sup> See [edgarscan.pwc.com](http://edgarscan.pwc.com)



860

**Figure 27: FRAANK Analysis - Quick Ratio**

Calculated Ratios for SEAGATE TECHNOLOGY INC	
<b>Quick Ratio:</b>	
(Cash and short-term investment + Account receivable) / Current liabilities. ----- The ratio reflects the company's ability to meet its current obligation with quick assets.	
The company's quick ratio for this selected quarter is: <u>1.065</u>	
The company's quick ratio for the previous quarter is : <u>0.846</u>	

EdgarScan is a similar but more developed analytical tool, albeit with narrower objectives. EdgarScan is designed to allow multi-year and multi-company analyses of information. Figure 28 shows an analysis of long-term financial trends for a single corporation. In this case, the analysis is of Balance Sheet trends. Trend analyses of the Income Statement and Cash Flow are also available.

865

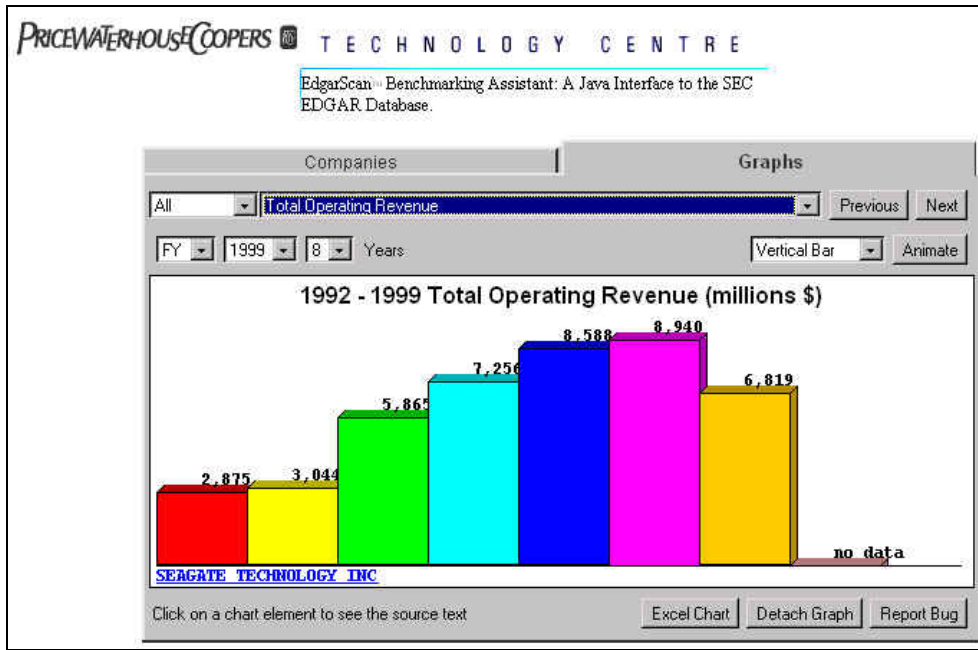
**Figure 28: EdgarScan – Long Term Financial Trends**

PRICEWATERHOUSECOOPERS TECHNOLOGY CENTRE										
EdgarScan™										
SEAGATE TECHNOLOGY INC: Extracted Financial Data										
Dollar amounts in thousands										
	1999 Q/3	1998 Q/3	1998 Q/2	1998 Q/1	1998 K	1997 K	1997 Q/3	1997 Q/2	1997 Q/1	1997 K
<b>Assets</b>										
Cash, \$	354,000	526,072	926,000	431,000	666,000	1,047,335	1,021,067	539,348	811,207	1,047,000
Receivables, \$	917,000	831,089	832,000	761,000	799,000	1,040,835	1,249,255	877,885	927,226	1,041,000
Inventory, \$	360,000	558,222	410,000	461,000	508,000	808,280	632,666	760,940	787,803	808,000
Deferred Tax Asset, \$	236,000	275,306	221,000	232,000	243,000	253,372	299,436	367,391	286,968	254,000
Other Current Assets, \$	126,000	283,377	133,000	244,000	238,000	166,223	185,755	156,608	141,967	166,000
Current Assets, \$	3,240,000	3,669,178	3,813,000	3,572,000	3,615,000	4,552,307	4,723,972	3,813,210	3,855,140	4,552,000
Net Property Plant & Equipment, \$	1,661,000	1,693,160	1,678,000	1,665,000	1,669,000	1,786,625	1,618,512	1,752,885	1,855,213	1,787,000
Total Assets, \$	5,229,000	5,727,113	5,830,000	5,603,000	5,645,000	6,722,879	6,705,069	5,933,115	6,075,485	6,723,000
<b>Liabilities</b>										
Accounts Payable, \$	628,000	600,522	610,000	521,000	577,000	863,141	713,942	638,329	619,023	863,000
Income Tax Expense, \$	23,000	-72,000	41,000	9,000	-174,000	233,197	232,832	-100,000	-10,000	233,000
Current Liabilities, \$	1,502,000	1,429,703	1,503,000	1,339,000	1,375,000	1,836,354	1,589,711	1,488,999	1,389,111	1,836,000
Allowances, \$	34,000	57,856	54,000	54,000	54,130		60,834		57,183	
Common Equity, \$	3,000	2,519	3,000	3,000	3,000	2,519	2,452		0	3,000
Deferred Tax, \$	499,000	514,387	481,000	431,000	435,000	478,840	529,302	537,099	521,359	479,000

EdgarScan includes a Java™ applet that generates graphs and bar charts of selected financial statement elements over user-defined periods. Figure 29 shows a multi-year bar chart of total operating revenue.

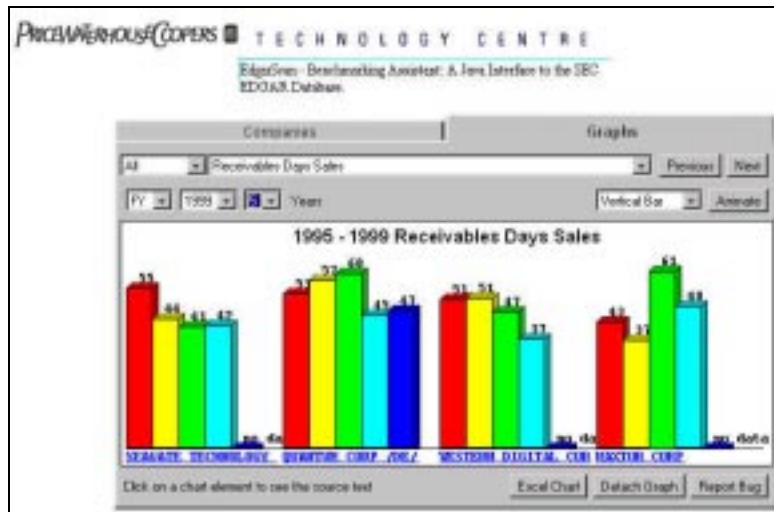
870

**Figure 29: EdgarScan – Graphing of Financial Results**



875 EdgarScan understands which companies in the Edgar database are peers to the selected corporation. The Java™ applet allows the user to then select desired peers and, again, display selected financial statement data or, as in the case of Figure 30, ratios such as the displayed “Receivable Days Sales”.

**Figure 30: EdgarScan Peer Group Review**



880 **Issues:** For intelligent agents to operate effectively, a reasonable level of structure in the information base is required. Whilst intelligent agents can and do operate with unstructured data, their performance is significantly improved by access to data that has at least some structure.

## 2.13 XML

885 **Technological Overview:** The eXtensible Markup Language (XML) is the next generation of markup languages after HTML. XML is a tightly defined, large subset of SGML<sup>76</sup> defined by the W3 Consortium<sup>77</sup>. The long-established SGML standard is widely used in a variety of high volume publishing environments and it allows for many variants. XML has been planned to be a simpler and more certain version of SGML.

890 Not only does XML tell the browser how to display text and graphics as HTML does, but it also provides the ability to represent data relationships. XML is extensible – new tags can be developed that can convey information about data to software agents and humans<sup>78</sup>. A paragraph inside a XML version of a Directors' Report might look like the following in the browser:

895           The problem loans at Dec-31-1998 totalled \$10,000,000 or 2% of total loans at this date of \$500,000,000

The XML code underlying this paragraph would be:

```
900           <p>The problem loans at <fiscal-year_end>Dec-31-1998</fiscal-year_end>totalled $<loans-problem>10,000,000</loans-problem> or 2% of total loans at this date of $<loans>500,000,000</loans></p>
```

A software agent could read the XML code and know with 100% certainty that for the “fiscal-year\_end” ended 31 December, 1998 the “loans-problem” totalled \$10m. The software agent needs not understand any of the other language on the page. It can retrieve the required and available information directly from the page and pass the information to  
905 some other application or store it in a database.

**Use in Business Reporting:** XML is a relatively new development, but one in which interest is growing rapidly in a variety of areas where information must be exchanged between parties on the Internet. Areas under development include a standard form for syndication of news stories<sup>79</sup>, electronic commerce frameworks<sup>80</sup> and corporate interchange  
910 of data with suppliers<sup>81</sup>. In a development closely related to accounting, J.P. Morgan & Co. Incorporated and PricewaterhouseCoopers LLP have announced the development of FpML<sup>82</sup> (Financial Products Markup Language) to facilitate exchange information on

<sup>76</sup> See [www.xml.org](http://www.xml.org), [www.xmlinfo.com](http://www.xmlinfo.com) and [www.xml.com](http://www.xml.com) for current and background information. For the logic for XML see Connolly, D., Khare, R., and Rifkin, A. (1997) 'The Evolution of Web Documents: The Ascent of XML', *World Wide Web Journal*, 2(4): 119-128.; Bray, T. (1997) *Beyond HTML: XML and Automated Web Processing*: Netscape Communications Corp.. For an overview, including a chapter on XML and financial reporting see Goldfarb, C. F., and Prescod, P. (1998) *The XML Handbook*. Upper Saddle River, NJ: Prentice Hall PTR.

<sup>77</sup> See [www.w3.org/XML/](http://www.w3.org/XML/)

<sup>78</sup> The application of XML to the representation of accounting is covered in depth in Debreceny, R., Gray, G., and Barry, T. (1998). *Accounting Information in a Networked World - Resource Discovery, Processing and Analysis*. Paper presented at the American Accounting Association Annual Meeting, New Orleans. Professor Bob Jensen maintains an accounting and XML site at [www.trinity.edu/rjensen/](http://www.trinity.edu/rjensen/) See also [www.xml.com](http://www.xml.com) and [www.xml.org](http://www.xml.org)

<sup>79</sup> See standard by ICE (Information Content and Exchange Protocol) ([www.w3.org/TR/NOTE-ice](http://www.w3.org/TR/NOTE-ice)).

<sup>80</sup> See [www.commerce.net/projects/currentprojects/eco/index.htm](http://www.commerce.net/projects/currentprojects/eco/index.htm)

<sup>81</sup> For example, by 3Com Inc. See [archive.infoworld.com/cgi-bin/displayStory.pl?980917.wi3comxml.htm](http://archive.infoworld.com/cgi-bin/displayStory.pl?980917.wi3comxml.htm)

<sup>82</sup> See [www.fpml.org/](http://www.fpml.org/)

financial products, including derivatives, between market players. According to the parties, FpML<sup>○</sup> will provide an XML-based protocol for “electronic dealing and information sharing of financial derivatives, initially handling interest rate and foreign exchange products”. The standard will be in the public domain<sup>83</sup>.

The specifications for tagging of submissions to the USA SEC’s EDGAR system are defined in SGML. XML is, as discussed in Chapter 5, a tightly defined version of SGML. The requirements of the EDGAR filing can be easily moved to any broader XML accounting environment. The AICPA has also recently published a putative standard for the XML-based representation of accounting information in the form of the eXtensible Financial Reporting Markup Language (XFRML)<sup>84</sup>

Unlike HTML, XML is fully multi-lingual, an important consideration for business reporting. A page using XML tags may be readily translated into a wide variety of languages.

**Issues:** Successful migration of accounting information beyond the bounds of individual corporate Web sites will require *attribute recognition* – the ability of both humans and software agents to be able to recognise particular quantitative financial statement disclosures and perhaps qualitative disclosures. XML would seem to provide a stable platform for global dissemination of financial and non-financial information. While there are no current standards for accounting, there is interest in XML in the broader accounting and regulatory environment. Both the AICPA and the SEC are actively considering how XML should be used in accounting reporting; developments that will be further discussed later in this report.

## 2.14 CONCLUSION

In this Chapter, we have canvassed current and future developments in CD-ROM and Internet technologies. These developments take us from well-established technologies such as CD-ROM and electronic paper (Adobe Acrobat) to new, but rapidly developing technologies such as XML and intelligent agents.

Figure 31 places the major technologies discussed in this chapter into a typology of information use/reuse and flexibility. Both CD-ROMs and electronic paper are static – once pressed, a CD-ROM never changes. Both technologies are designed primarily for a single human user. Electronic paper has a higher level of information reuse – for example, the files can be indexed within a particular Web site although not by the major search engines. HTML is used primarily for static representation of information. Coupled, however, with the addition of JavaScript and Java<sup>TM</sup> and database interaction, HTML can be more dynamic than CD-ROMs or electronic paper. Information in HTML is reused by the process of hyperlinking references to complete documents, indexing in search engines and,

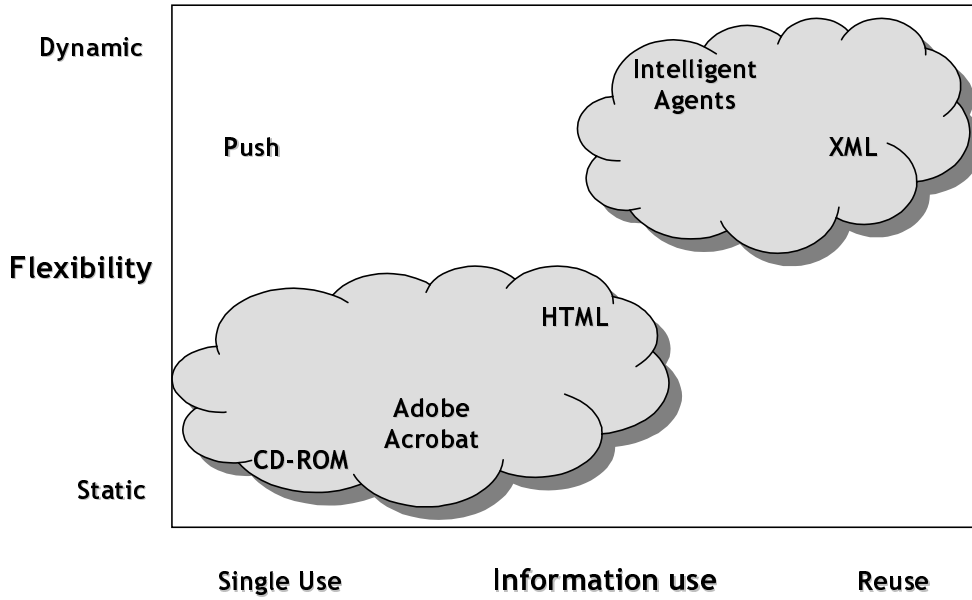
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<sup>83</sup> FpML<sup>○</sup> there are several initiatives to build specialist international XML-based solutions for commerce. They include Microsoft’s BizTalk ([www.biztalk.org](http://www.biztalk.org)), the Business & Accounting Software Developers Association’s (BASDA) eBIS initiative ([www.basda.org](http://www.basda.org)) and Commerce XML (cXML) for the exchange of eCommerce data ([www.cxml.org](http://www.cxml.org)). Robin Cover provides pointers to more than 30 commerce oriented XML protocols and proposals at [www.oasis-open.org/cover/xml.html#applications](http://www.oasis-open.org/cover/xml.html#applications). A relatively new organisation, the Organization for the Advancement of Structured Information Standards (OASIS) ([www.oasis-open.org/](http://www.oasis-open.org/)) promotes the development of interoperable XML and SGML standards.

<sup>84</sup> [www.xfml.org](http://www.xfml.org)

950 with considerable difficulty by extraction of particular attributes. Information in HTML documents is typically static. In contrast, the XML language was designed to allow dynamic documents. Documents in XML format include identifiable information attributes that can readily be used and reused by a wide variety of applications.

**Figure 31: Electronic Reporting Technologies**



## 3 EXISTING BUSINESS REPORTING ON THE INTERNET

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### 3.1 INTRODUCTION

For large USA corporations, investor relations pages with quarterly and annual disclosures are now ubiquitous—despite the requirement that all of these corporations must make  
 960 EDGAR filings that are, in turn, also immediately available on the Web. Corporations in other parts of the world are not quite as advanced as the USA, but a substantial number of corporations in the 21 other countries investigated for this study are also making financial reports available on the Web. The nature of the disclosures varies widely. Disclosures range from brief summary reports, to electronic copies of the printed financial statements that  
 965 must be downloaded in (typically) Adobe Acrobat format and sent to a printer, and, finally, to full financial statements in HTML for on-screen viewing and printing. This chapter begins with a review of the existing literature on financial reporting on the Web. Next, the results are presented of a survey of the Web reporting practices of 660 public corporations in 22 countries. The chapter concludes with a discussion of relevant activities of the SEC  
 970 and other regulatory organisations.

### 3.2 EXISTING LITERATURE ON WEB REPORTING

Over the last four years, there has been growing research on financial reporting on the Web<sup>85</sup>. This research confirms that there has been rapid adoption of the Web for the dissemination of business reporting information.

975 While USA corporations were early adopters and a higher proportion of USA corporations report on the Web than their counterparts in, for example, Europe, the differences are diminishing.

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<sup>85</sup> Major references include McCafferty, J. (1995, December). How much to reveal online. *CFO: The Magazine for Senior Financial Executives*, 11, 12.; Louwers, T. J., Pasewark, W. R., and Typpo, E. W. (1996) 'The Internet: Changing the way corporations tell their story', *CPA Journal*, 66(11): 24-28.; Koreto, R. J. (1997) 'When the bottom line is online', *Journal of Accountancy*, 183(3): 63-5.; Gray, G. L., and Debreceeny, R. S. (1997, November). *Corporate Reporting on the Internet: Opportunities and Challenges*. Paper presented at the Seventh Asian-Pacific Conference on International Accounting Issues, Bangkok.; Miller, R., and Young, M. R. (1997) 'Financial Reporting and Risk Management in the 21st Century', *Fordham Law Review*, 65(5): 1987-2064.; Gowthorpe, C., and Flynn, G. (1997) 'Reporting on the Web: The state of the art', *Accountancy*, 120(1248): 58-59.; Debreceeny, R., Gray, G., and Barry, T. (1998). *Accounting Information in a Networked World - Resource Discovery, Processing and Analysis*. Paper presented at the American Accounting Association Annual Meeting, New Orleans. ; Petravick, S., and Gillett, J. W. (1998) 'Distributing earnings reports on the Internet', *Management Accounting (USA)*, 80(4): 54-56. ; Debreceeny, R., Gray, G., and Rahman, A. (1999). *Voluntary financial reporting on the Internet: An international perspective*. Paper presented at the American Accounting Association Annual Meeting, San Diego. . A special issue of the *European Accounting Review* in 1999 is devoted to an analysis of the accounting and audit issues of electronic reporting. See Lymer, A. (1999) 'The Internet and the Future of Corporate Reporting in Europe', *European Accounting Review*, Vol. 8 No. 2.

980 The proportion of companies using the Web for financial reporting is increasing in all  
 countries with active capital markets and advanced communications networks. Petravick  
 and Gillett (1996) reported that 81% of Fortune 150 companies in the USA had Web sites  
 that provided some financial information. Gray and Debreceeny (1997) reported that 34  
 of the Fortune 50 industrial USA corporations distributed annual reports by Web, and  
 Louwers et al. (1996) found that 23% of the top 150 Fortune 500 companies published on  
 985 the Web information similar to their printed reports. Deller et al. (1998) estimated that 91%  
 of USA S&P 500 corporations were using the Web for investor relations activities by the  
 beginning of 1998. In respect of quarterly and other announcements, Petravick and Gillett  
 (1998) discovered that 99 of the 125 Fortune 500 companies monitored placed their  
 earnings announcements on their Web sites on the day following their announcements. This  
 990 timing would seem to indicate that these companies must view the Web an important outlet  
 for this information.

Similar work has also been carried out in Europe. In 1996, a study of UK FTSE-100  
 companies suggested that for companies with Web sites, larger companies were  
 significantly more likely to include some financial information on their sites. Industrial  
 995 classification, however, was not related to Web disclosure<sup>86</sup>. In 1997, 50% of the top 50 UK  
 corporations were making similar use of the Web to that suggested by the USA studies<sup>87</sup>,  
 while a third of companies listed on the Helsinki Stock Exchange provided no financial  
 data on their own Web sites<sup>88</sup>. Of the 100 largest companies in the world in 1997, German  
 companies tended to provide the least business reporting via the Web, but generally country  
 1000 designations are less important than the nature of the business and its attitudes to its various  
 stakeholders<sup>89</sup>. In early 1998, 71% of German companies and 72% of UK companies made  
 use of the Web for investor relations<sup>90</sup>. This can be contrasted with the situation at the end  
 of 1998 in Spain where 45% of companies traded on the largest Spanish exchange (Madrid)  
 had Web sites but only 19% of these provided 'complete' accounts online and 44% of them  
 1005 had no financial data of any kind<sup>91</sup>.

The level of adoption of the Web for business reporting in Europe is rapidly increasing.  
 Hussey et al. (1998) tracked disclosure by the largest 100 companies in August 1997 and  
 March 1998. As shown in Table 2, 54% of companies were using the Web to disclose in  
 1997 as compared with 63% in 1998. The intensity of reporting had also increased over this

<sup>86</sup> Marston, C., and Leow, C. Y. (1998). *Financial Reporting on the Internet by leading UK companies*. Paper presented at the 21st European Accounting Association Annual Congress, Antwerp, Belgium. See [www.summa.org.uk/SUMMA/corp/papers/papers.html](http://www.summa.org.uk/SUMMA/corp/papers/papers.html)

<sup>87</sup> Lymer, A., and Tallberg, A. (1997, April). *Corporate Reporting and the Internet - a survey and commentary on the use of the WWW in corporate reporting in the UK and Finland*. Paper presented at the 20th Annual Congress of the European Accounting Association, Graz, Austria.

<sup>88</sup> Lymer, A., and Tallberg, A. (1997, April). *Corporate Reporting and the Internet - a survey and commentary on the use of the WWW in corporate reporting in the UK and Finland*. Paper presented at the 20th Annual Congress of the European Accounting Association, Graz, Austria.

<sup>89</sup> Flynn, G., and Gowthorpe, C. (1997). *Volunteering financial data on the World Wide Web. A Study of financial reporting from a stakeholder perspective*. Paper presented at the 1st Financial Reporting and Business Communication Conference, Cardiff.

<sup>90</sup> Deller, D., Stubenrath, M., and Weber, C. (1998). *Investor Relations and the Internet: Background, Potential Application and Evidence from the USA, UK and Germany*. Paper presented at the 21st Annual Congress of the European Accounting Association, Antwerp, Belgium.

<sup>91</sup> Molero, L. J., Prado, M., and Sevillano F, J. M. (1999). *The Presentation of Financial Statements through the Internet: Analysis of the most significant companies in Spain*. Paper presented at the 22nd Annual Congress of the European Accounting Association, Bordeaux, France.

1010 period, as can be seen in Table 2, with a 30% increase in the companies reporting detailed financial statements.

**Table 2: Financial Information Disclosed - UK FTSE 100 Companies.**

Source: Hussey et al., 1998

Type of Information	August 1997		March 1998	
	Number	%	Number	%
Detailed Accounts	30	55.6	54	85.7
Interim Statements	22	40.7	45	71.4
Preliminary statement	12	22.2	17	27.0
Summary statement	5	9.3	12	19.0
Financial Highlights	15	27.8	26	41.3
<b>TOTALS</b>	<b>54</b>		<b>63</b>	

1015 Other studies<sup>92</sup> illustrate the situation found in other European countries at the end of 1998 and during the early part of 1999. It is clear from these studies that the UK is still somewhat ahead of the rest of Europe in the provision of financial information online. Other parts of Europe (e.g., Germany, Austria, and Sweden) are catching up fast and some parts (e.g., Spain) still have a long way to go. These developments are, to a degree, being driven by the  
 1020 recent changes to the accounting regulations in Germany and Austria allowing many of their largest companies for the first time to report using International Accounting Standards. The lead taken by Swedish companies is attributed to their need to seek international investors given the relatively small size of their domestic market<sup>93</sup>.

### 3.3 CURRENT WEB AND MULTIMEDIA REPORTING

#### 1025 3.3.1 The Background

The previous section has shown that corporations have rapidly adopted the Web for the dissemination of financial information. These reports are, with the exception of the Lymer and Tallberg (1997) study of financial reporting in the UK and Finland<sup>94</sup>, all single-nation studies. To provide a more in-depth view of Web-based business reporting, this section  
 1030 analyses the extent and characteristics of such reporting across many countries.

The first step in this inquiry was to query pages indexed by AltaVista that contain selected text<sup>95</sup>. Table 3 shows the number of pages that contain the term "Balance Sheet" or

<sup>92</sup> See for example Gowthorpe, C., and Amat, O. (1999) 'External reporting of accounting and financial information via the Internet in Spain', *European Accounting Review*, Vol. 8 No. 2.; Heldin, P. (1999) 'The Internet as a Vehicle for Investor Information; the Swedish Case', *European Accounting Review*, Vol. 8 No. 2.; Pirchegger, B., Schader, H., and Wagenhofer, A. (1999) 'Financial Information on the Internet - A Survey of the Homepages of Austrian Companies', *European Accounting Review*, Vol. 8 No. 2.

<sup>93</sup> See Heldin, 1999.

<sup>94</sup> Lymer, A., and Tallberg, A. (1997, April). *Corporate Reporting and the Internet - a survey and commentary on the use of the WWW in corporate reporting in the UK and Finland*. Paper presented at the 20th Annual Congress of the European Accounting Association, Graz, Austria.

<sup>95</sup> The AltaVista search engine only indexes less than 20% of indexable Web pages, as we discuss in the next chapter. The search engine will also not report text inside an Adobe Acrobat PDF file or in content that is interactively retrieved from databases. AltaVista does, however, have good non-USA coverage and provides excellent control over the search characteristics. The data reported in Table 3 under-reports the actual level of reporting and is, therefore, only indicative.



1035 “Statement of Financial Position”. It is considered that there is a high level of correspondence between the number of pages found with these terms and the extent of financial reporting on the Web.

**Table 3: Indicative Level of Financial Reporting**

Search Term	Domain	Number of Pages
Selected English Language Countries		
Balance Sheet or Statement of Financial Position	All	171,465
Ditto	.com (primarily USA)	123,340
Ditto	UK (.uk)	6,358
Ditto	Australia (.au )	4,284
Ditto	Canada (.ca)	3,493
Ditto	South Africa (.za)	1,664
Ditto	New Zealand (.nz)	900
Ditto	Singapore (.sg)	330
Ditto	Hong Kong (.hk)	304
Selected Non-English Language Countries		
Ditto, English pages	Germany (.de)	810
Ditto + pages in German (der Bilanz)	Germany (.de)	2,765
Balance Sheet or Statement of Financial Position, English pages	France (.fr)	322
Ditto + pages in French (le bilan)	France (.fr)	16,461

1040 The table shows that there are a large number of pages that contain the designated terms in the .com, .uk, .ca and .za domains. In Germany and France there are only a moderate number of pages in the national languages as well as pages in English, for the international investor audience. Although it varies by country, Table 3 indicates that there are a large number of corporations publishing their financial statements on the Web.

### 3.3.2 Further Evidence on Web-based Performance Reporting

1045 The information reported in Table 3 is, however, only a snapshot of the extent of reporting at a highly aggregate level. For the purpose of this study what is needed is an accurate understanding of the extent and intensity of Web-based reporting. To achieve this objective, a survey was made of large listed corporations in 22 countries. The sample was made up of

1050 the 30 largest corporations listed in the Dow Jones Global Index<sup>96</sup> for each of 22 countries, or a total of 660 companies. It was considered that companies listed in this index would have a substantial global following from institutional investors as well as a national following from institutional and retail investors. The countries were selected to provide a geographic balance and a range of advanced and developing capital markets.

1055 For consistency only annual financial reporting was analysed. Specifically, the major emphasis of the study was to assess the extent of annual reporting in its various forms. There is a progression of financial reporting on the Web from a stage that replicates the annual printed financial statements to the use of Web technologies that enhances what is achieved in print. Figure 32 describes three stages of Web financial reporting:

**Figure 32: Stages of Web Financial Reporting<sup>97</sup>**

Stage	Characteristics	Pros	Cons
Stage I	Duplicates the printed financial statements in “electronic paper” (e.g., Adobe’s <i>Acrobat</i> )	<ul style="list-style-type: none"> <li>• Has familiar look of printed report</li> </ul>	<ul style="list-style-type: none"> <li>• Needs plug-in</li> <li>• No hyperlinks</li> <li>• Cannot be indexed in search engines</li> </ul>
Stage II	Uses HTML formatting, data downloading	<ul style="list-style-type: none"> <li>• Can hyperlink</li> <li>• Can index</li> </ul>	<ul style="list-style-type: none"> <li>• Graphic files not automatically saved when HTML page is saved</li> <li>• Can get lost in hyperspace</li> </ul>
Stage III	Uses enhancements that cannot be incorporated in printed documents	<ul style="list-style-type: none"> <li>• Provides alternative ways to present complex information</li> </ul>	<ul style="list-style-type: none"> <li>• May require plug-ins for some enhancements</li> <li>• May lead to information overload</li> </ul>

1060 In Stage I, existing printed reports are turned into “electronic paper” and published on the Web. As discussed in the previous chapter, this is an inexpensive, straightforward process.

<sup>96</sup> See [www.dowjones.com](http://www.dowjones.com) for the makeup of the national indexes. A complete list of corporations surveyed in this study is available from the authors. The number of corporations is less than 30 where the number of companies in the Dow Jones index was itself less than 30 or where, as with a few companies, we were not able to access the Web site or, if we were able to access the Web site, were not able to access the investor relations section or financial statements.

<sup>97</sup> Source: Debreceny, R., Gray, G., and Rahman, A. (1999). *Voluntary financial reporting on the Internet: An international perspective*. Paper presented at the American Accounting Association Annual Meeting, San Diego.

In Stage II, corporations take the time and effort to convert their printed reports into HTML. This indicates that corporations are serious about using the Web as an information distribution medium. The annual reporting sites of Intel, Microsoft and IBM illustrated in the previous chapter are examples of reporting at Stage III where companies move beyond the printed-document paradigm.

A checklist<sup>98</sup> was developed to capture key information of both a financial and non-financial nature. While one of the sections on the checklist covered downloadable files, each of the other sections reviewed only Web-based disclosures.

An exhaustive search was undertaken to establish the existence of a Web site for each corporation. Elements of the search included interrogating national bourses, specialist sites such as RealNames<sup>99</sup> that track corporate and product names, investment analysis sites such as Hoovers<sup>100</sup> and Wrights<sup>101</sup>, portals such as Yahoo,<sup>102</sup> and full-text search engines such as AltaVista. Local knowledge of corporations was also used in some cases to ensure maximum possible accuracy. In spite of the care taken in the survey, it is not possible to definitively state that a corporation does *not* have a Web site. Financial reporting pages on a third-party site (other than that of the designated corporation) was excluded unless there was a hyperlink from the corporation to the third party site.

We then extensively surveyed each site to complete a checklist devised for the purpose of providing a consistent view of the corporation. Again, it is not possible to definitively state that content does *not* exist on a corporate Web site. This particularly applies to those questions that relate to other than the financial statements such as product information and non-financial indicators. Many of the corporate sites are large and complex or employ counter-intuitive or complex navigation strategies. It is often difficult to find the desired information and, despite significant effort, some information may have been missed. The results in the next sub-section are likely, then, to be an underestimate of the actual reporting.

### 3.3.3 Results

**Stage of Reporting:** As discussed in the previous sub-section, companies are at different stages in their use of the Web for financial reporting. At present, there are very few examples of Web reporting that take full advantage of its technical capabilities. Most reporting is confined to Stages I and II. Table 4 shows the level of reporting by country. The table breaks down reporting into seven categories: Download (primarily in Adobe Acrobat format), HTML summary financial reporting only and summary reporting coupled with the ability to download financial reports and full financial reporting in HTML, both

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<sup>98</sup> Reproduced in the Appendix.

<sup>99</sup> See [www.realnames.com](http://www.realnames.com)

<sup>100</sup> See [www.hoovers.com](http://www.hoovers.com)

<sup>101</sup> See [profiles.wisi.com](http://profiles.wisi.com)

<sup>102</sup> See [www.yahoo.com](http://www.yahoo.com) and its associated finance sites including [quote.yahoo.com](http://quote.yahoo.com) and [finance.yahoo.fr](http://finance.yahoo.fr) and [finance.yahoo.de](http://finance.yahoo.de)

with and without downloads<sup>103</sup>. Companies that have their full financial statements on the Web may also have financial summary information on their Web sites.

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<sup>103</sup> To count as “HTML Financials” had to have published both their Income Statement and Balance Sheet in HTML format on the Web site. Cash flow statements and notes were not required.

**Table 4: Stage of Development of Financial Reporting by Country**

	Stage of Disclosure														Total	
	No Web site		Web site, no financials		Download accounts only		HTML summary only		HTML summary + download		HTML accounts		HTML accounts + Download		Count	Row %
	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %		
Australia	0	0%	6	20%	7	23%	1	3%	11	37%	2	7%	3	10%	<b>30</b>	<b>100%</b>
Brazil	2	7%	12	40%	3	10%	1	3%	3	10%	6	20%	3	10%	<b>30</b>	<b>100%</b>
Canada	0	0%	2	7%	5	17%	0	0%	0	0%	1	3%	22	73%	<b>30</b>	<b>100%</b>
Chile	14	47%	6	20%	4	13%	1	3%	1	3%	2	7%	2	7%	<b>30</b>	<b>100%</b>
Denmark	4	13%	6	20%	5	17%	2	7%	5	17%	1	3%	7	23%	<b>30</b>	<b>100%</b>
France	0	0%	5	17%	4	13%	2	7%	4	13%	3	10%	12	40%	<b>30</b>	<b>100%</b>
Germany	0	0%	7	23%	5	17%	0	0%	0	0%	6	20%	12	40%	<b>30</b>	<b>100%</b>
Hong Kong	11	37%	9	30%	0	0%	1	3%	1	3%	6	20%	2	7%	<b>30</b>	<b>100%</b>
Italy	5	17%	13	43%	2	7%	4	13%	0	0%	2	7%	4	13%	<b>30</b>	<b>100%</b>
Japan	2	7%	8	27%	5	17%	1	3%	2	7%	6	20%	6	20%	<b>30</b>	<b>100%</b>
Malaysia	17	57%	5	17%	2	7%	3	10%	1	3%	2	7%	0	0%	<b>30</b>	<b>100%</b>
Mexico	6	20%	3	10%	2	7%	5	17%	1	3%	12	40%	1	3%	<b>30</b>	<b>100%</b>
Netherlands	3	10%	8	27%	4	13%	2	7%	0	0%	8	27%	5	17%	<b>30</b>	<b>100%</b>
NZ	3	10%	11	37%	3	10%	2	7%	2	7%	5	17%	4	13%	<b>30</b>	<b>100%</b>
Norway	6	20%	3	10%	10	33%	1	3%	4	13%	0	0%	6	20%	<b>30</b>	<b>100%</b>
Singapore	5	17%	11	37%	3	10%	4	13%	1	3%	5	17%	1	3%	<b>30</b>	<b>100%</b>
South Africa	4	13%	4	13%	4	13%	2	7%	3	10%	7	23%	6	20%	<b>30</b>	<b>100%</b>
South Korea	4	13%	8	27%	2	7%	6	20%	0	0%	10	33%	0	0%	<b>30</b>	<b>100%</b>
Spain	8	27%	11	37%	2	7%	1	3%	0	0%	4	13%	4	13%	<b>30</b>	<b>100%</b>
Sweden	0	0%	3	10%	9	30%	3	10%	4	13%	4	13%	7	23%	<b>30</b>	<b>100%</b>
UK	1	3%	11	37%	0	0%	0	0%	4	13%	3	10%	11	37%	<b>30</b>	<b>100%</b>
USA	0	0%	3	10%	2	7%	2	7%	2	7%	12	40%	9	30%	<b>30</b>	<b>100%</b>
<b>Total</b>	<b>95</b>	<b>14%</b>	<b>155</b>	<b>23%</b>	<b>83</b>	<b>13%</b>	<b>44</b>	<b>7%</b>	<b>49</b>	<b>7%</b>	<b>107</b>	<b>16%</b>	<b>127</b>	<b>19%</b>	<b>660</b>	<b>100%</b>

1100 As can be seen from Table 4, 86% of the corporations surveyed had a Web site. The  
penetration rate varied from 100% for Germany, Sweden, Canada and the USA, to 53% in  
Chile. Even in countries with relatively low general Internet penetration rates amongst the  
general population, such as France and South Africa, a relatively high proportion of  
corporations had a Web site. Some 62% (410) of the corporations made some form of  
1105 financial disclosure on their Web sites. Of the 410 companies that made some type of  
financial disclosure on the Web, 80% (327) used HTML in some form with 57% (234)  
disclosing substantial elements of their complete financial statements on the Web and in  
HTML.

**Performance Analyses:** The overall business reporting performance of firms is  
1110 communicated in a number of ways and is often dependent on country practices, such as  
including management and directors' reports. Table 5 shows selected items of business  
reporting for those corporations that have some form of financial reporting on the Web.

**Table 5: Selected Performance Reporting Elements by Country**

	Chair's Report		Total	Corporate Information		Total	Year-in-Review		Total	Management Report		Total	Financial Summary		Total
	No	Yes		No	Yes		No	Yes		No	Yes		No	Yes	
Australia	14	10	24	2	22	24	12	12	24	20	4	24	8	16	24
Brazil	9	7	16	10	6	16	7	9	16	8	8	16	7	9	16
Canada	7	21	28	0	28	28	24	4	28	5	23	28	12	16	28
Chile	8	2	10	6	4	10	9	1	10	10	0	10	7	3	10
Denmark	19	1	20	8	12	20	8	12	20	14	6	20	5	15	20
France	10	15	25	12	13	25	17	8	25	21	4	25	5	20	25
Germany	13	10	23	8	15	23	13	10	23	11	12	23	11	12	23
Hong Kong	1	9	10	1	9	10	4	6	10	9	1	10	4	6	10
Italy	11	1	12	8	4	12	4	8	12	11	1	12	5	7	12
Japan	8	12	20	2	18	20	10	10	20	16	4	20	5	15	20
Malaysia	6	2	8	2	6	8	5	3	8	8	0	8	4	4	8
Mexico	8	13	21	9	12	21	9	12	21	14	7	21	7	14	21
Netherlands	10	9	19	5	14	19	13	6	19	11	8	19	8	11	19
NZ	6	10	16	5	11	16	9	7	16	12	4	16	10	6	16
Norway	19	2	21	7	14	21	13	8	21	19	2	21	13	8	21
Singapore	8	6	14	3	11	14	7	7	14	13	1	14	5	9	14
South Africa	12	10	22	12	10	22	15	7	22	18	4	22	11	11	22
South Korea	7	11	18	12	6	18	15	3	18	16	2	18	6	12	18
Spain	6	5	11	8	3	11	9	2	11	7	4	11	7	4	11
Sweden	21	6	27	13	14	27	20	7	27	25	2	27	14	13	27
UK	1	17	18	7	11	18	3	15	18	10	8	18	1	17	18
USA	6	21	27	2	25	27	10	17	27	13	14	27	3	24	27
Total	210	200	410	142	268	410	236	174	410	291	119	410	158	252	410

**Complete Financial Statements:** The disclosure in HTML of financial statements was highly variable. Some companies gave the major financial statements only (e.g., Income Statement, Balance Sheet and perhaps Cash Flow). Others provided full sets of financial statements including the notes and auditors' reports. Table 6 shows the reporting of key financial statement elements for those companies providing financial information online, in whatever form. It can be seen, for example, that the practice of placing auditors' reports online varied widely by country.



Table 6: Selected Financial Statement Elements

	Balance Sheet		Total	Income Statement		Total	Cash Flow Statement		Total	Notes to the Accounts		Total	Changes in Equity Statement		Total	Audit Report		Total	Segment Report		Total
	No	Yes		No	Yes		No	Yes		No	Yes		No	Yes		No	Yes		No	Yes	
Australia	18	6	24	17	7	24	19	5	24	19	5	24	22	2	24	20	4	24	23	1	24
Brazil	6	10	16	6	10	16	8	8	16	10	6	16	9	7	16	9	7	16	12	4	16
Canada	5	23	28	3	25	28	6	22	28	8	20	28	14	14	28	11	17	28	16	12	28
Chile	6	4	10	6	4	10	8	2	10	10	0	10	10	0	10	10	0	10	10	0	10
Denmark	12	8	20	12	8	20	13	7	20	15	5	20	19	1	20	17	3	20	16	4	20
France	8	17	25	9	16	25	11	14	25	19	6	25	12	13	25	21	4	25	14	11	25
Germany	5	18	23	5	18	23	8	15	23	11	12	23	20	3	23	14	9	23	14	9	23
Hong Kong	2	8	10	2	8	10	6	4	10	8	2	10	10	0	10	8	2	10	9	1	10
Italy	6	6	12	4	8	12	8	4	12	11	1	12	9	3	12	11	1	12	10	2	12
Japan	8	12	20	8	12	20	11	9	20	10	10	20	15	5	20	13	7	20	14	6	20
Malaysia	6	2	8	5	3	8	7	1	8	7	1	8	8	0	8	8	0	8	7	1	8
Mexico	7	14	21	8	13	21	13	8	21	14	7	21	15	6	21	15	6	21	14	7	21
Netherlands	6	13	19	6	13	19	8	11	19	14	5	19	16	3	19	14	5	19	10	9	19
NZ	7	9	16	7	9	16	7	9	16	12	4	16	8	8	16	15	1	16	11	5	16
Norway	15	6	21	15	6	21	18	3	21	17	4	21	19	2	21	18	3	21	16	5	21
Singapore	8	6	14	8	6	14	13	1	14	14	0	14	13	1	14	13	1	14	12	2	14
South Africa	9	13	22	9	13	22	10	12	22	18	4	22	18	4	22	19	3	22	16	6	22
South Korea	7	11	18	7	11	18	11	7	18	11	7	18	12	6	18	11	7	18	17	1	18
Spain	3	8	11	3	8	11	8	3	11	9	2	11	11	0	11	9	2	11	9	2	11
Sweden	16	11	27	16	11	27	19	8	27	24	3	27	27	0	27	26	1	27	22	5	27
UK	4	14	18	4	14	18	4	14	18	4	14	18	8	10	18	5	13	18	8	10	18
USA	6	21	27	6	21	27	6	21	27	10	17	27	14	13	27	9	18	27	17	10	27
Total	170	240	410	166	244	410	222	188	410	275	135	410	309	101	410	296	114	410	297	113	410

1125 **Downloads of Financial Statements:** Many Web sites provide downloads of their financial statements and/or annual reports. Table 7 shows the use of downloads by country. There is considerable variation between countries. The USA has a surprisingly low frequency of downloads, perhaps reflecting the time that these corporations have been involved in publishing information on the Web and a higher reliance solely on HTML.

1130 Conversely, Canadian and Norwegian companies frequently support user printing of financial statements by providing downloads.

**Table 7: Availability of Downloads by Country**

	Download Financial Statements		Total
	No	Yes	
Australia	3	21	24
Brazil	7	9	16
Canada	1	27	28
Chile	3	7	10
Denmark	3	17	20
France	5	20	25
Germany	6	17	23
Hong Kong	7	3	10
Italy	6	6	12
Japan	7	13	20
Malaysia	5	3	8
Mexico	17	4	21
Netherlands	10	9	19
NZ	7	9	16
Norway	1	20	21
Singapore	9	5	14
South Africa	9	13	22
South Korea	16	2	18
Spain	5	6	11
Sweden	7	20	27
UK	3	15	18
USA	14	13	27
Total	151	259	410

### 3.4 EDGAR AND OTHER NATIONAL DISCLOSURES

1135 In this section the efforts of national securities regulators and registrars of corporations to bring business reporting from proprietary disclosures and filing to open standards, and particularly to the Web, are discussed. In addition, we review efforts to regulate or provide guidelines for online reporting.

1140 The USA's SEC's, with its EDGAR system, (Electronic Data Gathering and Reporting<sup>104</sup>) and the Canadian Securities Administrators system, with its SEDAR system (Systems for Electronic Document Analysis and Retrieval<sup>105</sup>) are currently the only securities regulators that publish corporate filings on the Web. The complete EDGAR database can be searched interactively on the Web, either via the SEC's own site or via the many clones of the database<sup>106</sup>. The SEDAR information can also be accessed directly online.

1145 The EDGAR system is an interesting model in several respects. First, EDGAR attempts to ascribe semantic meaning to the filings. Official filings with the SEC are in ASCII (plain text) and SGML. The SGML tags identify not only information about the filing but also dates and major financial statement attributes. A selected set of financial statement tags is shown in Appendix C. The filers have followed the EDGAR manual with varying degrees  
1150 of compliance. Developers of applications such as FRAANK and EdgarScan have had to use a variety of strategies to achieve an adequate level of functionality. Nonetheless, the level of semantic representation of both financial and non-financial data is high. The SEC has appropriately balanced the public interest in making filings available to the widest audience over the Web with the need to secure funding for maintenance of the system.  
1155 Currently, the SEC is grappling with upgrading of the system. It now allows unofficial filings in HTML and Adobe Acrobat forms, and is considering the role of XML in the future of EDGAR.

Similar developments by other corporate regulators are being discussed or are now in place<sup>107</sup>. In Australia, the Australian Securities and Investments Commission (ASIC) allows  
1160 electronic prospectuses. Recently, ASIC has also allowed Web filing of company registration information for small corporations. A similar system is also planned from the beginning of 2000 for all companies by the Austrian registrar of companies (Firmenbuch). This information will have to be filed via the company's auditors. Similarly, in the UK there are plans to introduce electronic filing for statutory annual returns for small  
1165 businesses. This plan will extend the current set of documents that can already be filed electronically with the national company registration agency, Companies House.

Another key regulator grouping already involved in providing online corporate data are the stock exchanges. Companies listed on the Deutsche Börse's Neuer Markt Stock Exchange<sup>108</sup>, for example, now supply listing information on the exchange's Web site,  
1170 which hosts recent data on all listed companies, typically including calendars, reports, links to the corporations' Web sites, and charts. Currently, not all this information is provided for each company. Other exchanges provide links to the Web sites of corporations listed on the particular exchange.

1175 Some regulators, whilst not yet requiring electronic submission of documents, have however, provided guidance to companies on how to present financial data online on their own Web sites. In Canada, the Toronto Stock Exchange has developed guidelines for

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<sup>104</sup> [www.sec.gov/edgar](http://www.sec.gov/edgar)

<sup>105</sup> - [www.sedar.com](http://www.sedar.com)

<sup>106</sup> For example, by EdgarOnline ([www.edgar-online.com](http://www.edgar-online.com)).

<sup>107</sup> Some of the information in this paragraph is drawn from IOSCO, 1998.

<sup>108</sup> - [www.neuer-markt.de](http://www.neuer-markt.de)

“electronic communications”<sup>109</sup> of corporate reporting on the Web. The TSE encourages corporations to make investor relations information available on the Web and sets out in common-sense language guidance on “do’s” and “don’ts” of electronic communication. In France the Commission des Opérations de Bourse (COB) has regulated Web disclosures in a similar fashion to the long-standing regulation of the French national Minitel system. A summary of the COB guidelines follows<sup>110</sup>:

***Recommendations No 87 - 01 and No 93-01, summary of key provisions***

1185 *Accountability of the site promoter for disclosed information: Obligation to state name of publisher.*

*Update of information: Clear mention must be given of the last update of the displayed information. Automatic update procedure must be in place to avoid errors or neglect. Time of origin of quotes and other market data must be specified (date and exact time).*

1190 *Origin of information: Obligation to state the exact origin of third party releases. Clear distinction must be made between financial analyses and original data.*

*Issuers must indicate reference to filings made with the COB (when applicable) for every financial operation mentioned on their site.*

*In that case, indication must be given on the means to obtain this document at no cost.*

1195 *No Minitel-only disclosure for issuers: No market-sensitive information shall be displayed on Minitel before disclosure by public release. Conversely all market sensitive information disclosed by public release must be mentioned on the Minitel site of the issuer. If the release is displayed in a summarized version, reference of the complete version must be given.*

*No anonymous chat room on a Minitel site of an issuer for fear it could be used abusively by issuer to provide transaction advice on its securities.*

1200 *Recordkeeping: electronic or paper records of information must be kept up to 6 month after display on Minitel site*

1205 *Also, based on Rule No96-03 Section III Art. 24, the COB has authority over Collective Investment Schemes to control their information documents before they release it to them, to their customers or to the general public. This applies to electronic transmissions as well as to printed material.*

Several governmental agencies in countries such as Australia and Singapore now provide access to corporate filings on a fee-for-service basis. These systems are proprietary. They do not resemble either EDGAR or SEDAR.

### 3.5 CONCLUSION

1210 The Web is changing many aspects of commerce and society around the world. One of areas that have been subject to the most change has been the availability of financial information with sources such as the EDGAR and SEDAR services as well as share price

<sup>109</sup> [tse.com/mregs/pdf/final\\_electronic.pdf](http://tse.com/mregs/pdf/final_electronic.pdf)

<sup>110</sup> for the full guidelines see [www.cob.fr/wCOB/Documents/Communiqués/eng/1999/199905031627D008N01.PDF](http://www.cob.fr/wCOB/Documents/Communiqués/eng/1999/199905031627D008N01.PDF) - note, only the French version of this document in English should be considered the definitive guidelines

information. The research reported in this chapter, shows that there has been broad and deep adoption of the Web for reporting financial and related performance information in many countries. The chapter reports a study of Web-based business reporting by 660 corporations in 22 countries in Europe, Asia-Pacific and North and South America. Some 86% of these corporations had a Web site. A total of 410 of these companies had some form of financial reporting on their Web sites. Some 234 companies have in-depth reports on their Web sites in HTML, indicating a higher level of investment in making information available than merely by electronic paper. A range of other studies that are referenced in this chapter confirms the overall results of this study. In summary, a significant number of companies in many countries use the Web for communication of business performance to stakeholders.

## 4 SETTING STANDARDS FOR BUSINESS REPORTING ON THE INTERNET: THE SHORT TERM PERSPECTIVE

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### 4.1 INTRODUCTION

1230 This chapter addresses the question of whether there is a role for the IASC in setting  
standards or guidelines for the presentation of business reporting information on the  
Internet. Our response to this question is firmly in the affirmative. Hitherto, the standards  
developed by the IASC and national standards setting organisations have concerned  
themselves primarily with *principles* and *disclosure* and not *presentation* of financial and  
1235 other business reporting information. Indeed, in many countries, presentation is the  
responsibility of securities regulators and companies operating under legislative mandates.  
As a consequence of global information technology such as the Internet and a global  
business environment, it is increasingly difficult to divorce the method by which  
information is presented from the standards under which the information has been prepared.  
There is a clear role for the IASC in the development of standards for the Internet  
1240 presentation of business reporting information both in the short-term and into the future.

Standards for electronic presentation of accounting and business information need not be in  
conflict with those that operate for other media reporting at the national level. Standards  
should seek to reinforce a common global and networked representation of accounting  
principles, practices, and terminologies. In our view it is important for global accounting  
1245 standards to be integrated into Web-based business reporting. Further, it is likely global  
standards for accounting and business reporting would significantly enhance the visibility  
of such information amongst the many hundreds of millions of pages on the Web by  
increasing the quality of the information provided. The opportunities for the reuse and  
integration of information in wider business analysis would also be enhanced.

1250 As clearly demonstrated in Chapter 3, there has been rapid adoption of the Internet and the  
Web for business reporting. Companies typically have used Adobe's Acrobat and/or HTML  
as the technological foundation. While the underlying technologies are common,  
corporations use diverse and inconsistent routes that are of varying quality to present  
business performance reporting information on the Web. There is a need to improve the  
1255 quality of reporting on the Web in both technological and information quality dimensions.

## 4.2 STANDARDS FOR CURRENT LEVEL OF REPORTING

### 4.2.1 Introduction

1260 The business reporting environment is currently in an early stage where business reporting  
is evolving from an almost entirely paper-based environment to one that is likely to be  
almost entirely digitally based. This is confirmed by the wide range of technologies that  
corporations are currently using on the Web, which range from faithful digital versions of  
1265 printed reports to versions of reports in HTML and Java that may take many very different  
forms from their associated paper versions. This move from long-established and well-  
understood communication forms to new digital modes of communication can lead to an  
undesirable reduction in certainty for the information consumer. The relationship between  
information that is published on the Web and comparable information that is published in  
other media, such as on paper, is usually not clearly stated by corporations.

1270 We strongly support efforts to improve the standing of business reporting on the Web by  
the development of new guidelines, better termed “Codes of Conduct”. These guidelines  
will provide both corporations and information users with a framework within which the  
exchange of data can take place with a maximum of efficiency. The guidelines would add  
value to all parties. These guidelines should be brought into effect as soon as possible  
1275 whilst longer-term standards, such as those discussed in chapter 5, are considered in further  
detail. The guidelines deal with the interim problems that arise when information is  
disclosed in multiple forms, including print, press releases, conference calls, and the Web.

For example, in the introduction to its ‘Electronic Communications Disclosure  
Guidelines’<sup>111</sup> the Toronto Stock Exchange suggests the following:

1280 *For financial markets, the Internet may be the greatest leap forward in  
providing information and analysis since the advent of electronic  
communications. It is putting relevant information at the investors’  
fingertips - instantaneously and simultaneously. But the Internet also poses  
regulatory challenges. In a world in which information is more readily  
1285 available than ever, it is more important than ever that it be accurate, timely  
and up-to-date.’*

Currently very few formal guidelines exist in this area. The exceptions to this rule are those  
provided by the Toronto Stock Exchange and those from the *Commission des opérations de  
bourse* (COB, the French Securities Market Regulator)<sup>112</sup>. Apart from these exceptions,  
1290 companies using the Web for reporting purposes are largely operating without national or  
international guidance on technology or content. The IASC, with its central role in the field  
of global business reporting, is well placed to provide guidance from the perspective of an  
accounting standard setter.

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<sup>111</sup> [www.tse.com/mregs/pdf/final\\_electronic.pdf](http://www.tse.com/mregs/pdf/final_electronic.pdf)

<sup>112</sup> [www.cob.fr/wCOB/Documents/Communiqués/eng/1999/199905031627D008N01.PDF](http://www.cob.fr/wCOB/Documents/Communiqués/eng/1999/199905031627D008N01.PDF)

### 4.2.2 *The Nature of the Standards*

1295 This section identifies areas for which accounting guidance is required for business  
reporting online. It focuses on issues of immediate concern. The following chapter  
addresses longer-term issues where a different reporting environment could eventually  
exist. The code presented here would be applicable to all companies who place their IAS  
1300 accounts online. It should be complied with in full, and this fact should be noted on the  
Web site containing this information.

In developing these suggestions the authors have drawn from the existing limited guidance  
from the Toronto Stock Exchange and the French COB, as described above, and from other  
sources that provide guidance on accounting and auditing issues. The suggestions deal with  
the issues of online reporting using existing technologies already widely in evidence -  
1305 namely HTML, electronic paper (Adobe Acrobat), plug-ins and multimedia.

### 4.2.3 *Standards for Web-based Business Reporting - A Code of Conduct for Current Application*

Set out below are matters that the IASC and others should consider in developing a Code of  
Conduct for Web-based business reporting:

#### 1310 *A. Multi-modal reporting:*

1. ***Relationship of Web-based reports to reports in other forms: Where an  
enterprise is producing information in other forms such as in printed  
reports or in press releases, the enterprise should include on its Web site  
versions of its financial reports that include the information provided in  
1315 those other forms. Information disclosed on the Web should not be  
contradictory to other versions of its published financial reports. If, for  
some reason, documents available online do not provide the full  
information from their original formats, the fact that information is  
missing should be clearly indicated, and a point of contact for obtaining  
1320 this information should be provided. Conversely, if additional information  
is provided on the Web that is not provided in other formats, the fact that  
this is additional information should be disclosed.***
2. ***Multiple online files. If financial reports provided online have the same  
content as versions in other formats, but has been divided into separate  
documents for online presentation or downloading convenience, all parts  
of the set should be listed together on the entity's Web site, and appropriate  
cross referencing between the documents should be provided.***
3. ***Multiple GAAP reports. If financial reports in print and other media are  
published on multiple GAAP bases, at least the same data should be  
1330 available online.***
4. ***Boundaries of IAS financial statements. The boundaries of the complete  
set of IAS financial statements should be clearly recognisable on an  
enterprise's Web site, so that a user will know when he/she has moved out***



1335 *of the IAS financial statement area. IAS 1 provides guidance on identification of financial statements.*

5. *Boundaries of the “financial report.” Users should be given clear indication when a departure point has been reached from the financial report – that is, audited financial statements and related operating and financial data (e.g., Intel’s 1996 accounts as discussed in Chapter 1.4).*

1340 **B. GAAP usage:**

1. *Multiple GAAP online. If an enterprise publishes on the Web a complete set of financial statements or other financial information on the basis of IAS and also one or more other national GAAPs, the GAAP basis of each set of financial statements should be clearly identified.*
- 1345 2. *Reconciliation to IAS. Reconciliation to International Accounting Standards should be provided for each GAAP basis used, and material differences should be explained.*
- 1350 3. *Non-IAS financial information. Financial or other quantified data that an enterprise publishes on the Web that is not part of or derived from the enterprise’s IAS financial statements should not be presented in such a way as to suggest that it conforms to an IASC Standard. Examples might include forecasted data, environmental data, social responsibility data, management analyses, and qualitative disclosures. It is important that users are able to distinguish information that is prepared using International Accounting Standards from other information that may be useful to users but is not the subject of Standards. Section 720 of the Codification of International Standards on Auditing and International Auditing Practice Statements provides guidance on the auditor’s consideration of other information in documents containing audited financial statements.*
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- 1360

**C. Completeness of data:**

1. *Excerpts from financial statements and selected data. If an enterprise publishes on the Web an excerpt from a complete set of IAS financial statements as defined in IAS 1 – for instance, just the Income Statement, just the Balance Sheet, all of the basic financial statements but without the Notes to the Financial Statements, or only selected financial data – the presentation should be clearly identified as an excerpt from a complete set of IAS financial statements, and reference should be made to where the complete set of IAS financial statements can be found or obtained.*
- 1365
- 1370 2. *Components of financial statements individually downloadable. If an enterprise makes available for downloading from the Web a complete set of IAS financial statements but the various individual components of the complete set are available for downloading individually – for example, each financial statement, the notes, and the auditor’s report are separate electronic files – the financial statements in the individual files need not be*
- 1375

*labelled as excerpts provided that all of the components of the complete set are listed together on the enterprise's Web site.*

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- 1405
3. **Detailed financial information.** *If an enterprise publishes on the Web more detailed financial information than is contained in its complete set of IAS financial statements, but that more detailed information is a disaggregation of data that is in the financial statements and is otherwise consistent with IAS, the additional data should be labeled as consistent with the IAS financial statements and, if possible, should be reconciled to an amount reported in the IAS financial statements. Further, reference should be made to where the complete set of IAS financial statements can be found or obtained. Further, whether the more detailed financial information has or has not been audited should be clearly noted.*
  4. **Historical financial summaries.** *If an enterprise publishes a historical financial summary on the Web, the accounting principles that underlie the data should be clearly identified. For example, if each year's historical data is as originally reported (that is, based on the IAS that were in effect in that year) that fact should be noted. If data have been restated retrospectively for IAS adopted subsequently, that fact should be noted.*
  5. **Supplementary financial information made public.** *Supplementary financial information that has been released by the enterprise that is not widely available (for example, data for analysts' briefings, press releases, books of facts or statistics, and other investor relations materials) should be provided online for the benefit of all stakeholders. This will allow users to determine if information generated by the enterprise is of relevance to them rather than this decision being made on their behalf by the enterprise.*
  6. **Auditor's report.** *The report should make clear which pages are subject to an audit opinion. If the auditor's report on the complete set of IAS financial statements contained a qualification, or other emphasis of matter, that detail should be clearly noted.*

#### **D. Languages:**

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- 1415
1. **Language translations.** *If the main reading languages of an enterprise's key stakeholders are different from the language used in the enterprise's primary online financial report, information should be provided to them in more than just the main language of the enterprise to encourage the widest usefulness possible of the Web site.*
  2. **Language translations and audit.** *If an enterprise provides on the Web translations of its IAS financial statements into one or more languages other than its primary language, and only the primary language financial statements were audited, that fact should be clearly noted in the translated versions.*

**E. Accessibility:**

1. **Stability.** All pages should be identifiable and re-creatable to enable users to bookmark and return to data on repeated occasions.
- 1420 2. **Archiving of financial statements and related data.** An enterprise's published financial statements and related data should be archived and not be removed from general access once made available online, to enable corporate databases of previously published information to be accessible to users for analysis purposes. However, archived data should be clearly identified as such to avoid confusion with more recent versions of similar information.
- 1425 3. **Restatement.** If an International Accounting Standard requires restatement of prior financial data, both adjusted and unadjusted data should be available within the online data archive. The unadjusted data should be kept online because the original unadjusted paper versions also continue to be available. Each set of data should clearly state whether it has been restated or uses the original standards in operation at the time the data was initially released
- 1430

**F. Timeliness:**

- 1435 1. **Dating of pages.** All pages should be clearly dated with the date of origin and the date of the last amendment.
2. **Availability of price-sensitive data.** All price sensitive data should be available via the Web site as soon as local reporting restrictions for such data have been complied with.

**G. Usability:**

- 1440 1. **Downloads.** Key data should be provided for users in a format that is downloadable for off-line analysis. This information should include, as a minimum, the statutory filings made by the enterprise in its primary jurisdictions.
- 1445 2. **Ease of printing.** Information should be presented online in formats and designs suitable for printing offline.
3. **Change notification.** Users should be informed of significant changes to the Web site. This could be achieved by offering an electronic mail notification service and/or by providing a date order listing of changes to the site.
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**H. Currency conversion:**

1. **Convenience currency conversions.** If an enterprise provides on the Web a facility for a user to dynamically change the reporting currency (the monetary unit) of its primary financial statements into another currency based on period-end or period-average rates of exchange, such a "convenience translation" should be clearly identified for what it is and
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*that it does not conform to the foreign currency translation provisions of IAS 21.*

**I. Links:**

- 1460           1.     **Internal links.** *Internal link integrity should be assured at all times.*
2.     **External links.** *External link integrity should be achieved to the highest degree possible. Where links cannot be so maintained they should not form a part of the business reporting Web site and should be hosted elsewhere on the entity's Web site(s).*

1465           **J. Security:**

1.     **Responsibility.** *Users of information reported electronically by an enterprise have the right to presume that the enterprise is taking legal responsibility for the accuracy and completeness of the data. Where this is not the case, it should be clearly stated to users along with the data.*
- 1470           2.     **Data created by others.** *The enterprise should clearly identify information that is part of its Web site (that is, within its address sub-sets), but that the company did not create. The source of the information should also be clearly stated.*
3.     **Security precautions.** *All reasonable security precautions should be taken to prevent unauthorised alteration to official corporate data.*
- 1475           4.     **Authentication.** *Appropriately authenticated signatures should be attached to audit statements on the site and to other signed documents where authenticity could be questioned.*

**K. Errors:**

- 1480           1.     **Correction of errors.** *If errors are found to exist in documents that were placed on line, any changes should be clearly indicated on the original documents or linked to the original to prevent misrepresentation*

**L. Contact Points**

- 1485           1.     **Further Details.** *The Web site should clearly indicate from where users can obtain further information in electronic or written form. This should include email contacts, telephone and fax details and other information such as physical addresses for mailing purposes.*

#### **4.2.4 Responsibilities for Implementing the Code of Conduct**

1490           A number of parties are responsible for elements of Web-based financial and business reporting and for any related code of conduct. Distinct responsibilities should be assigned to these parties for business reporting information placed on corporate Web sites. These minimum levels of responsibilities will be different for different stakeholders, as shown,

but should be considered as the foundation of a mutual agreement for use of the Web for business reporting.

1495 A. Listed Corporations should:

1. Agree to conform to the 'Code of Conduct' in full or to specify where and why deviation has occurred.
2. Prepare their Web site(s) in such a way that there is a clear distinction between business reporting information for investor relations purposes and promotional and other materials.

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B. Auditors of listed corporations should:

1. Be responsible for ensuring there is a clear indication on the enterprise's Web site of information that is verified by them, and information that has not been verified.
2. Ensure that the reporting entity conforms fully to the 'code of conduct' where they claim to do so or that any deviations are noted in the audit report.
3. Actively monitor the corporation's Web site for significant changes to information between periodic audits. Changes that could bring into question the continued validity of any audit report on the data should be noted by changing the report.

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C. Users of the Web sites covered by the proposed Code of Conduct should:

1. Expect to be treated as having a reasonable level of knowledge of business and accounting practice and review the site in full before acting upon any information it may contain.
2. Inform site managers immediately of problems with the Web site such as apparently incorrect or incomplete data.

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### 4.3 CONCLUSION

This chapter outlines a proposed standard, in the form of a *Code of Conduct*, for use with existing Web technologies for business reporting. It is suggested that the IASC, as a respected international accounting standard setter, is well placed to create and obtain support for this code. It is argued that online reporting is developing to the point where some guidance on minimum requirements could add significant value to the development of further online reporting, which in turn may lead to greater utility for users of business reporting data.

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The Code of Conduct proposed in this chapter is designed to enhance the quality of business reporting information provided on the Web by corporations. It does so by addressing questions such as, the relationship of Web-based financial information to comparable information published in other modes and formats, usability of Web-based

1530 information, link integrity on the Web site, timeliness of information availability, archiving of data from the Web site, and security of the content of the Web site. The Code is *not* intended to be a permanent solution to resolving the issues related to business reporting online as technology will continue to develop, and user expectations and demands will change over time. The following chapter addresses how standards can be developed to use dynamic Web technologies to add further value to online reporting activity.

## 5 STANDARDS SETTING FOR WEB-BASED BUSINESS REPORTING WITH FUTURE TECHNOLOGIES

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### 5.1 INTRODUCTION

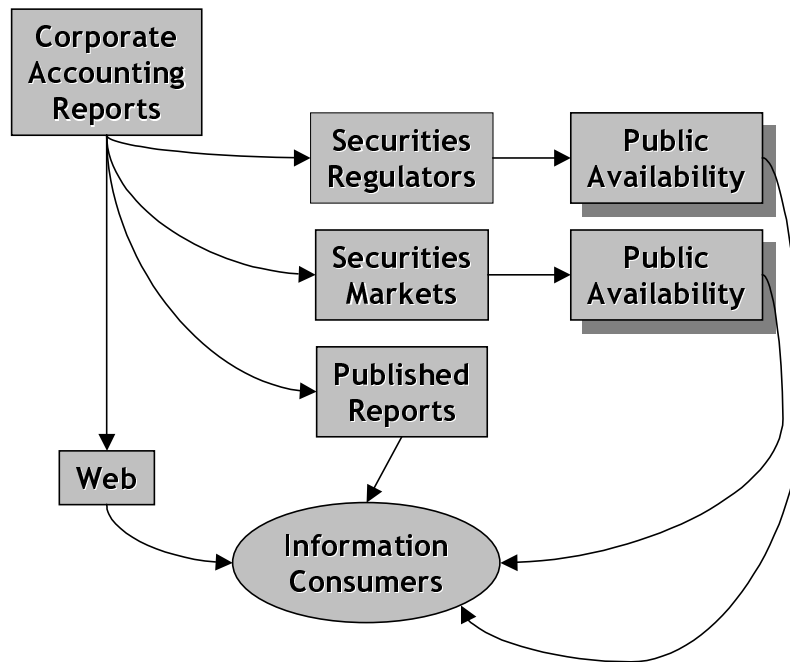
As discussed in Chapter 2, current technologies used by corporations for business reporting, particularly electronic paper (Adobe Acrobat) and HTML, have major weaknesses. They are awkward and generally more inflexible than is desirable. They do not enable users to find information quickly and accurately on the Web, nor do they facilitate reuse of information for analysis by neither highly sophisticated or naïve information consumers. As it can be anticipated that providers will move beyond these technologies, there is a role for a new standard for the electronic representation of business reporting.

New standards should seek to make business reporting much more accessible to information consumers. Currently such information is difficult to find amongst the large number of pages on the Web. Further, business reporting should be able to be interpreted by intelligent agents as well as by humans. This is a demanding but essential condition for future developments in corporate reporting. It should be possible to share and integrate business reporting information with other information sources on the Web. Effective development of standards for new generations of Web technologies such as XML will require much thought, investigation, and consideration of alternative solutions.

This chapter addresses the development of standards for business reporting using technologies not currently widely employed by corporations. It begins with a discussion on business-reporting information dissemination now and in the future. Technological barriers to such information dissemination and use, and potential solutions to these problems are identified and discussed. A new model for business performance reporting is set out. The likely attitudes of interested parties to the development of such a model are analysed. The chapter concludes with a review of alternative models for setting standards of this type.

### 5.2 BUSINESS COMMUNICATION

Information dissemination for listed public corporations is rather complex. Corporations disseminate business reporting information to different parties. They do so both voluntarily (e.g., analysts briefings) and following mandatory requirements (e.g., under stock exchange listing rules). Some of the dissemination modes are shown in Figure 33:



**Figure 33: Information Dissemination Modes**

In most jurisdictions, all information is eventually available in the public domain. The registrar often charges fees directly to information consumers or on information intermediaries. In most cases, the information disclosures shown in Figure 33 are made in print form. Further, at present, apart from EDGAR and the few similar reporting systems, all accounting information published on CD-ROM and the Web is designed for human interaction. The reporting is on pages that are either exact replicas of the printed page, as is the case with Acrobat reports, or bear close resemblance to the printed page, as is the case with Web pages coded in HTML. While disclosures in Adobe Acrobat form significantly improve the accessibility of financial statements, they do not change in any fundamental way the form of communication between supplier and consumer of the information. Humans must still examine the financial statement disclosures closely to make judgements or upload the information into their own analysis tools for subsequent manipulation and comparison.

Users still need to obtain access to pages on which financial information is provided, manually identify the required data points and input those data points into their own decision model. The decision model may be a mental model (“these figures seem a bit high”) or a formal model (“what is the trend in EPS over the last five years?”) but it is a model established and controlled by the user of the data not its producer. Where the information in a formal model is contained in a user-constructed spreadsheet, it may require many years of data<sup>113</sup>. Many models also require peer group analysis.

A principal issue for the reporting of financial information in electronic form is whether the information should be designed to be used by software agents acting on behalf of human decision makers. Many users of accounting information do not have direct access to the source of the information they use. A large market currently exists for accounting information intermediaries. These intermediaries access printed or, increasingly, batched

<sup>113</sup> See AICPA, 1994.

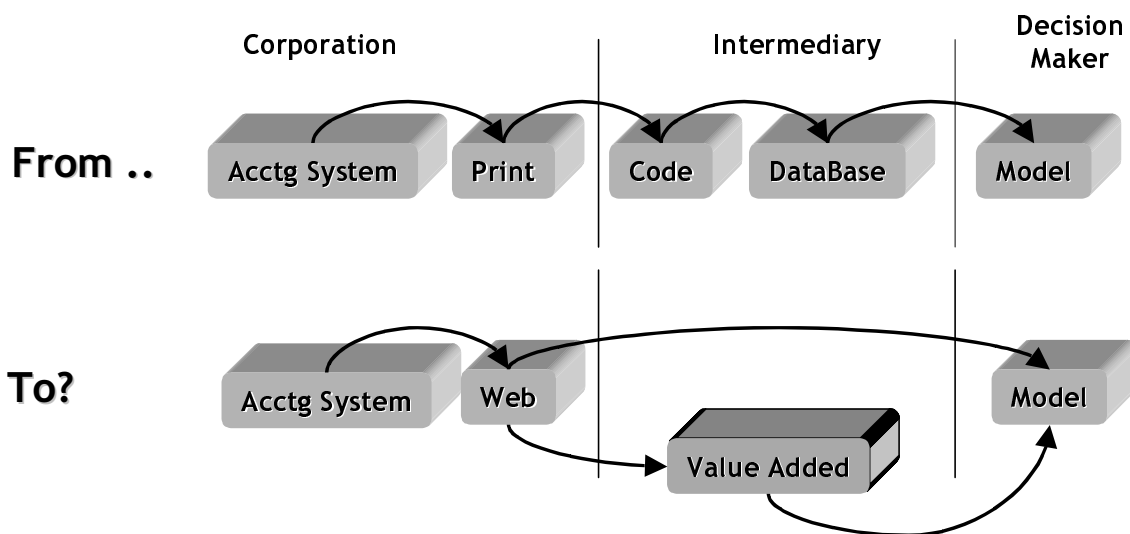


1595 electronic data feeds of annual, half-yearly and quarterly reports. The intermediaries  
manually extract the accounting information, make whatever adjustment they consider  
appropriate and then publish the information in various forms. These databases are typically  
1600 sold to skilled information consumers, such as financial analysts. These information  
intermediaries add value to public information by standardising and consolidating the  
information into a form that improves its accessibility for their customers. This current  
model of financial data usage is shown in the upper part of Figure 34. Information is  
1605 generated from computerised accounting information systems, published, coded, added to a  
database and then sold.

With the advent of the Web, a significant change is taking place in this information flow.  
Information is made directly available in digital form so as to allow users to find, read,  
interpret and analyse the information on Web pages. In the future, information consumers,  
1605 such as analysts, either directly or indirectly by using intelligent agents, will trawl the Web  
for business reporting data. These queries may be the equivalent of queries made on the  
commercial databases discussed in the previous paragraph. The queries may relate to single  
time periods for a single corporation, to longitudinal analysis on a single corporation, or to  
all forms of peer analyses. Rather than being made on proprietary databases, the queries  
1610 would instead be made directly on information repositories provided by corporations on the  
Web. The information provided by the repository would distinguish the level of assurance  
to be placed on the data points. The level of assurance might result from a statutory audit,  
from some additional level of assurance as provided by an auditor under a WebTrust or  
SysTrust engagement, or from some other trust-enhancing party.

1615 If the accounting profession was to encourage greater availability of high quality  
accounting and business reporting information of this type, new value-added information  
intermediaries will come into the marketplace and repackage the public information in new  
forms. This process in information distribution is described in the lower section of Figure  
34:

1620 **Figure 34: Changes in Information Distribution and Use**



At this point it is difficult to envisage all the varied potential uses for this information. The history of the Web shows that when high quality information is made available information consumers will seek it out. This has been the case with the EDGAR system. EDGAR

1625 information has been used on many specialist Web sites such as EDGAROnline, Yahoo!  
Finance and The Street. The peer group analysis service provided by  
PricewaterhouseCoopers' EdgarScan provides an example of how, when high quality  
information is made readily available, it is put to innovative use<sup>114</sup>. Further, while the focus  
1630 of this report is on the production of static accounting data, as predicted by a number of  
commentators<sup>115</sup>, it can be readily seen that the Web can provide a real-time interface  
between corporate accounting databases and accounting data users. This may be the  
equivalent of stored database searches.

### 5.3 COMBINED REPORTING

1635 A complementary trend in the distribution of knowledge on the Web is for information to  
be brokered, used, and reused in a number of different formats and venues. A good example  
of this trend is the sale of content by Reuters to a number of different sites and the recent  
business combination of Dow Jones and Reuters<sup>116</sup>. Reuters' news stories appear on the  
Yahoo! information 'portal' site, on their own Web site, and on more than 200 other sites.  
1640 The portal, of which Yahoo! is perhaps the best example, is an important development on  
the Web that may well become a permanent feature of this environment. Portals enable  
information from a variety of different sources to be integrated onto a single Web site. This  
combination of data from a variety of sources adds value for the consumer.

The focus of this report, and indeed of IASC standard setting in general, is on the  
production of accounting information by individual corporations. The IASC's traditional  
1645 focus has been on the financial statements but not on all supporting accounting information.  
It is not possible, however, to divorce the reported financial information from the other  
information produced by the corporation about itself, or from the information produced by  
other parties about the corporation (including share prices from securities markets). Nor is  
it wise to do so if a user is attempting to gain a complete understanding of the activities of  
1650 the corporation. The analysis of corporations by investors and financial analysts is also  
typically conducted as part of a peer review, in which information about one corporation is  
compared against other similar corporations in the same or different countries.

Information of a variety of types are potentially available, including:

- financial, quantitative information;
- 1655 - non-financial, quantitative information (such as non-financial performance  
indicators); and
- non-financial, qualitative information (such as press releases or news stories).

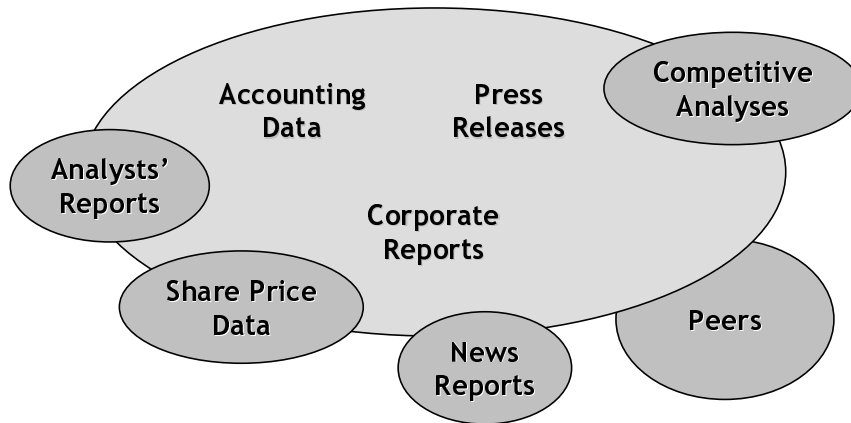
<sup>114</sup> See Peter Job, Chief Executive of Reuters Holdings plc "The impact of information technology and communications" in ICAEW. (1998). *Performance Measurement in the Digital Age*. London: Institute of Chartered Accountants in England and Wales.

<sup>115</sup> See Cushing, B. (1989) 'On the Feasibility and the Consequences of a Database Approach to Corporate Financial Reporting', *Journal of Information Systems*, 3(1): 29-52.; McCarthy, W. (1982) 'The REA Accounting Model: A Generalized Framework for Accounting systems in a Shared Data Environment', *Accounting Review*, 57(3): 554-578. Elliott, R. K. (1992) 'The Third Wave Breaks on the Shores of Accounting', *Accounting Horizons*, 6(2): 61-85.; Wallman, S. M. H. (1997) 'The future of accounting and financial reporting Part IV: Access Accounting', *Accounting Horizons*, 11(2): 103-116.

<sup>116</sup> [www.bestofboth.com](http://www.bestofboth.com)

The types of information that are relevant to decision makers are illustrated in Figure 35:

**Figure 35: Corporate Knowledge Convergence**



1660

An example of a current site that provides this type of portal information is *finance.yahoo.com* in the USA context. Here information is brought together from the corporation, the appropriate stock exchange, Reuters, analysts' reviews, the SEC's EDGAR filings and other materials found on the Web. Figure 36 shows the choices available for a corporation listed on the NYSE. Information can be viewed on-screen or downloaded in a format that can be analysed in a spreadsheet.

1665

**Figure 36: Convergence of Accounting Data**



1670

The convergence of information on this site also includes automatic extraction of accounting information from the EDGAR site and the integration of this information into the rest of the site. Figure 37 shows part of the most recent quarterly cash flow statement for the same corporation. This level of integration has been achieved by the strong semantic underpinning of the EDGAR database. While there are many practical difficulties in interpreting EDGAR documents, the EDGAR filings have the highest level of semantic representation currently available on the Web.

1675

**Figure 37: Convergence of Information – EDGAR Accounting Reports**

Financials - Seagate Technology Inc (SEG)		As of 17-May-99
Enter symbol: <input type="text"/>	<input type="button" value="Get Financials"/>	
<a href="#">symbollookup</a>		
More Info: <a href="#">Profile</a>   <a href="#">Research</a>   <a href="#">Msgs</a>   <a href="#">Insider</a>   <a href="#">Financials</a>		
<a href="#">Qtrly Rpt</a> - <a href="#">Balance Sheet</a>   <a href="#">Income Statement</a>   <a href="#">Cash Flow</a>		
SEAGATE TECHNOLOGY, INC. CONSOLIDATED CONDENSED STATEMENTS OF CASH FLOWS (In Millions) (Unaudited)		
	Nine Months Ended -----	
	April 2, 1999	April 3, 1998
	----	----
OPERATING ACTIVITIES:		
Net income (loss)	\$ 157	\$ (552)
Adjustments to reconcile net income (loss) to net cash provided by operating activities:		
Depreciation and amortisation	507	497
Deferred income taxes	73	13
In-process research and development	-	216
Non-cash portion of restructuring charge	34	202
Other, net	38	38

Not only will business reporting information be transmitted directly to the consumer in a form that can be directly acted upon – as we discussed in the previous section – but also be used and reused in both aggregated and disaggregated forms. Much of this information will be integrated with other, non-accounting information. Business reporting standards will need to accommodate these changes in information distribution and use.

## 5.4 TECHNICAL ISSUES

### 5.4.1 Usability

Providing accounting information in a usable format is a trade off between content, presentation and numeric detail. In most jurisdictions the basic content of annual statements is specified in accounting practice guidelines or law. This information leaves many possibilities for the ways in which specific datasets can be placed within these frameworks. A glance at any collection of printed annual documents will show the variety of presentation possibilities available in producing accounting information.

The provision of data in paper format is limited in fundamental ways by the fixed nature of the media used. Once electronic possibilities for delivery of accounting data are explored, the ability to deliver more usable data can be significantly extended.

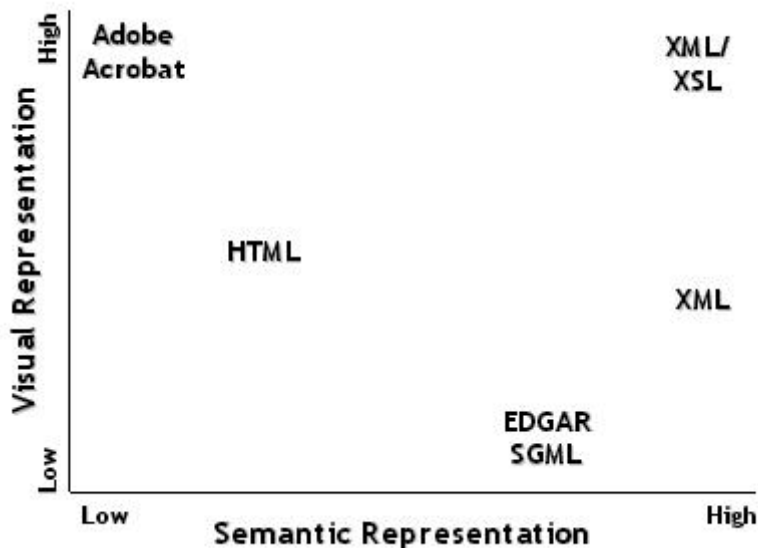
Figure 38 indicates a spectrum of electronic presentation possibilities for accounting data. At the fixed format end of this range are Adobe Acrobat files. Accounting data presented in this form usually closely follows the design of the paper versions of the data. A key advantage of using this technology is the fact it can be controlled to deliver financial data in similar ways to the comparable paper presentations. Whilst the use of this technology allows electronic dissemination of accounting data, it suffers from providing little improvement – compared to paper versions – in the usability of accounting data such as for subsequent modelling and analysis.

Reporting in HTML adds value to the user. Information can be indexed and more quickly retrieved than for Adobe Acrobat. HTML does not, however, allow the search engines to uniquely identify reporting data elements. Reporting formats are also inconsistent across corporations. Some corporate financial statements in HTML can be copied into a spreadsheet for further analysis, but typically this process results in unusable results<sup>117</sup>

A further development in the usability of accounting data is illustrated by EDGAR. An underlying semantic framework is used to limit how companies create their accounting data and the framework must be complied with for all electronic submissions to EDGAR. The key benefit of this rigid presentation framework is increased usability of data for subsequent electronic analysis. Basic assumptions about the construction and interrelationship of data items can be taken from its contextual framework. This makes importing and reusing of data direct from source easier.

The cost of this approach, however, is a further sacrifice to the visual control of the accounting information. This fact is clearly demonstrated when attempting to access EDGAR output that is presented in formats containing almost no visual consideration (compared to printed versions of the same information). Whilst this issue is currently being addressed by the SEC in their consideration of a revision to the EDGAR system, it remains a key limitation of the current system. Any standard for enhanced reporting must address the twin issues of visual and semantic representation. The relationship between visual and semantic representation and related technologies are illustrated in Figure 38.

**Figure 38: Tradeoff between Visual and Semantic Representation**



The next generation of data description languages, in particular XML and XSL<sup>118</sup>, begin to resolve these issues. Taken together, XML and XSL provide structures within which visual representation and semantic representation are not sacrificed for each other.

<sup>117</sup> For example, columnar data does not translate into the correct columns.

<sup>118</sup> XSL is a style language for XML. It is designed to allow usable visual representations of XML documents.

### 5.4.2 Resource Discovery

A further technical issue is finding required information on the Web—the process of resource discovery. For key paper-based documents, existing dissemination patterns are generally successful in providing financial information to those who want it. These users will include major stakeholders in corporations and other interested parties such as the press and public interest groups. A major constraint with this process, however, is the delay introduced into the flow of information from production through dissemination to the end user. Key financial information can take many months to become generally available at which point much of its implicit value can have been lost to at least some of its users.

With the greater availability of financial data on the Web comes the problem of information filtering. The discovery of information that is timely to decision making processes may not, in fact, have been eased by the use of electronic dissemination of information, but it has resulted in changes to the skill sets required amongst financial information users to enable them to gain timely access to needed information. These skills will include a good understanding of technology, the Web and the tools needed to access online data, but will also include previously important skills of personal relationships with information providers and data analysis ability.

It is very likely that further developments will occur in the role technology plays in filtering information for decision-making processes. Tools, such as intelligent agents, will begin to provide solutions to these problems in the near future.

Resource discovery is the process of finding business reporting information on the Web. Attribute recognition is the process of identifying particular financial/non-financial and quantitative/qualitative information on Web pages. For business reporting information on the Web to be valuable to information consumers, it must be locatable. There is little point in publishing extensive business reports, if the information consumers cannot readily find the information. As discussed earlier, as the volume of information on the Web grows, general-purpose search engines are not keeping pace. Current technologies used by corporations to publish their business reporting information do not result in acceptable visibility for this information. It is not easy, at present, for a user on the Web to request a search engine to locate, for example, the latest annual report for RWE AG, Intel, Microsoft, or any other corporation. It is not that the search engine will not return the company's official annual report Web site. Instead it will return thousands of potential Web sites from which the user will have to manually review to find the official Web site.

Attribute recognition is the process of identifying data points on the page once a particular page has been found. It means that a human user or an intelligent agent can identify with at or near to 100% accuracy, particular items including “Total Sales”, “Total Employees”, “Book-to-Bill ratio”, or “Diluted EPS” or more general information such as “Management Discussion and Analysis” or “Directors’ Report” for designated time periods. Adobe Acrobat and HTML effectively allow no identification of any information element.

Appropriate resource discovery is dependent on good metadata. Metadata is data *about* data. At the simplest, are the metadata tags on Web pages. More complex are the Library of Congress metadata records. There are, however, tradeoffs between “good” and “affordable” metadata. High quality metadata, as for example Library of Congress records, is very expensive, requiring highly skilled cataloguers to implement. The existing HTML META

tags are easy and cheap to implement, but are not very robust. Recent developments such as the Dublin Core<sup>119</sup> (a new, Web-based protocol for metadata) set of metadata tags are designed to sit between these two extremes and provide high quality yet cost effective resource discovery.

### 1775 **5.4.3 Information Processing**

Financial information for managing corporations is now largely electronic reflecting the shift to automated internal information processing. For a number of years this internal revolution has had impacts on the way financial data is made available for external processing, though this is developing at a much slower rate than for internal users.

1780 Most audits of externally focused annual reports are now conducted on electronic versions of financial data and these reports may well not ‘solidify’ in paper form until they have reached their final format. Other external users of accounting data, however, have had to wait much longer to get electronic data directly from corporations and have so far had to largely rely on intermediaries to re-digitise this data for them from various sources such as  
1785 statutory filings.

This break in the processing flow from internal to external usage of data can introduce errors but, at best, adds delays into the dissemination process. Ideally, providing direct access to data at various levels of disaggregation, would resolve both the re-keying error problems and improve the availability of data for external processing. Some examples of  
1790 how this process may develop can already be found. Microsoft Corporation is one such example. On their Web site<sup>120</sup> investor relations information is provided in downloadable formats that are suitable for further processing using various computerised tools<sup>121</sup>.

It is perhaps questionable whether open access to live data, as used for internal management of corporations, is needed or wanted by many consumers of financial data. Coupled with  
1795 concerns of data security and loss of competitive advantage, it would be difficult at present to create a case for general availability models of reporting of this kind. The use of shared corporate databases of information is occurring in many businesses where clear commercial reasons exist for allowing external entities access to subsets of corporate data. The development of dynamic businesses organisational structures, such as typified in virtual  
1800 organisations, illustrates where significant commercial advantage can be gained from widening access to previously limited data sets.

Current levels of database and communications technologies now make it possible to share large datasets in ways that would have not been possible as recently as five years ago. Further developments in information processing capacity moving from internal to external  
1805 consumption are very likely where commercial advantages are perceived.

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<sup>119</sup> See [purl.org/dc](http://purl.org/dc)

<sup>120</sup> See chapter 1.4.4 above.

<sup>121</sup> [www.microsoft.com/msft](http://www.microsoft.com/msft)

#### 5.4.4 Accounting Issues

1810 A key constraint to the development of wider electronic dissemination and use of financial data is the limited nature of current global agreement over accounting terms and methods of producing accounting numbers. While these major differences between countries in the ways in which financial data is produced exists, there will continue to be problems for the greater use of electronically available financial data.

#### 5.4.5 Attestation

1815 Arguably the single most important element in the future of Web-based business reporting is the role of attestation. Information consumers will view corporate business reporting information on the Web with a much more favourable view if major and clearly visible elements of the report have been attested. The audit profession has begun to grapple with issues of attestation in general and with providing assurance over Web sites. It is only a small step to modify, for example, WebTrust<sup>122</sup> to provide assurance over Web-based business reporting. A core element of any future standard for Web-based business reporting must, we believe, specifically address the role of implementation of attestation.

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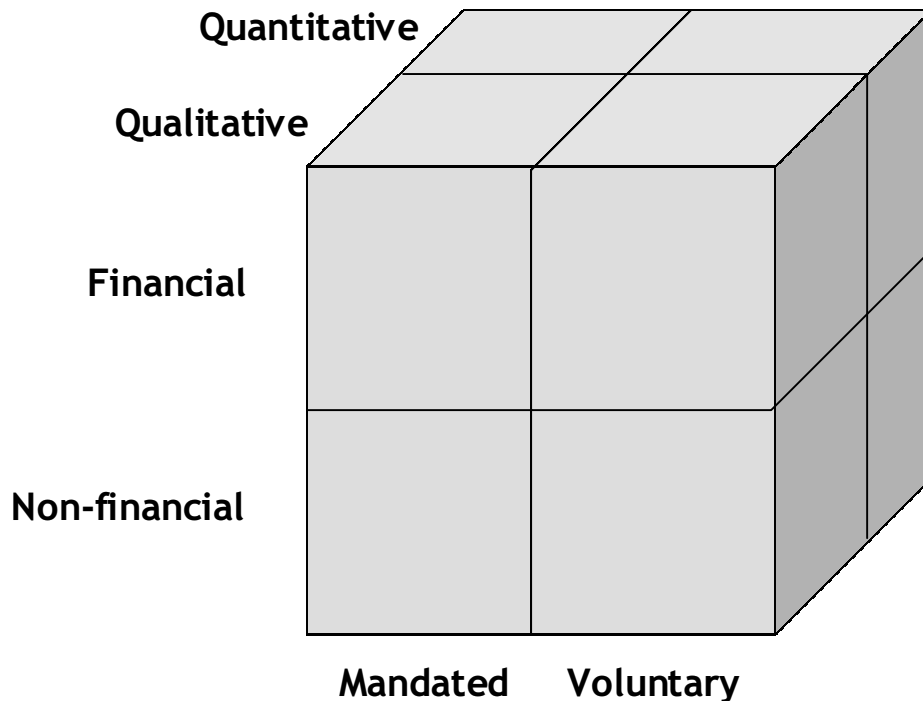
### 5.5 A BUSINESS REPORTING LANGUAGE

1825 To address the issues described in this chapter, a new global, digital, Web-enabled Business Reporting Language (BRL) is necessary. The BRL should allow the discovery, analysis and reuse of a wide set of business reporting information. The language should cope with each of the major types of information disclosure made by corporations. Figure 39 shows information dimensions as being made up of quantitative/qualitative, accounting/non-accounting, and mandated/voluntary disclosures.

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<sup>122</sup> See [www.aicpa.org/webtrust/index.htm](http://www.aicpa.org/webtrust/index.htm)



**Figure 39: Dimensions of Information**

1830 Increasingly, reporting under the generic term of “accounting” will be multifaceted and  
 employ financial and non-financial data and audio and video communications. Reporting  
 on non-financial data will be both quantitative and qualitative in nature. The report of the  
 Jenkins Committee provides a preview of such multifaceted reporting. More recently, the  
 1835 proposal by the Institute of Chartered Accountants in England and Wales (ICAEW) for a  
 “Statement of Business Risk” considerably extends the boundary of external “financial”  
 information beyond accounting numbers. A standard for a Business Reporting Language  
 must accommodate, we believe, each cell of the cube shown in Figure 39.

In particular, the BRL should provide for:

- Human and software agent use.
- 1840 • Information disclosures mandated by national securities regulators or securities  
 exchanges.
- Financial and non-financial disclosures.
- Recognition of a single set of global international accounting standards (e.g., “these  
 financial statements fully correspond to the standards of the IASC”).
- 1845 • Qualitative disclosures (“this section sets out management’s analysis of key  
 business risks”).
- Voluntary disclosures (“this report is XYZ’s monthly operating statement”).

- Multiple languages including automatic translation of primary accounting nomenclature.
- 1850 • Multiple currencies.
- A common set of accounting nomenclature with pointers to national/regional differences.
- Attestation by auditors or other information quality intermediaries of complete reports or parts of reports.
- 1855 • Static and active documents.
- Alternative valuation models.

The BRL should be based on open standards. Any specifications for the standard should be in the public domain and subject to license-free usage by interested parties (such as national securities regulators). Preliminary assessments suggest that XML meets the major specifications for creation of such a language. The AICPA has recently introduced a XML-based eXtensible Financial Reporting Markup Language (XFRML)<sup>123</sup>. XFRML has many similarities to the BRL proposed in this chapter.

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## 5.6 FORM OF A WEB BUSINESS REPORTING STANDARD

### 5.6.1 Introduction

Standards for electronic reporting will differ from those that currently apply for external financial reporting. If information is to be seamlessly exchanged on the Web, a high level of precision is required. To match this requirement, a Web business-reporting standard would of necessity need to reflect a level of detail that no accounting standard has yet had to deal with. To achieve this goal, two types of standards would be required: (1) detailed accounting domain knowledge, and (2) appropriate IT rules. Each of these areas is addressed in turn.

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### 5.6.2 Accounting Domain Knowledge

A Web business-reporting standard should ensure that Web site accounting data is in a form that an “intelligent agent” can interpret in the course of gathering information for periodic report analysis. When the agent comes to the page, it must be able to identify, for example, “Operating Profit” or “Total Sales” with 100% precision or such margin of error as the standard specifies. The differences in national reporting would present a major challenge to the IASC in describing a detailed accounting ontology. Indeed, a financial reporting standard would likely need to be designed to accommodate national differences.

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<sup>123</sup> See [www.xfrml.org](http://www.xfrml.org)

1880 **5.6.3 IT Expertise**

In setting such a standard, IT expertise much beyond that currently held by the IASC or national standard setters would be required. Consultants or partners would be required to write the detailed IT specifications and protocols. Fortunately, there are precedents for such standards with expertise residing in organisations such as the Big Five accounting firms<sup>124</sup> and the higher education sector.

**5.7 ALTERNATIVE PERSPECTIVES TO ELECTRONIC REPORTING**

**5.7.1 Introduction**

1890 Successful development and implementation of a global Business Reporting Language (BRL) will require new forms of standards and new modes of standards development. In developing these new models, we should consider the likely attitudes of stakeholders. At present, different stakeholders adopt different perspectives on the current and future use of accounting data in electronic formats. We now address the likely perspectives of different stakeholders to the development of a BRL.

1895 **5.7.2 Standard Setters**

Standard setters currently play a crucial role in the production, dissemination and use of accounting information. In the last five years new standard setting bodies have been established across Europe (notably in Germany and France) and in other parts of the world (e.g., South Korea) and existing standard's bodies have undergone, or are undergoing, major changes (e.g., the UK's ASB from the ASC in 1991 and the current changes to the IASC).

1905 These changes illustrate the increasingly important role being considered for both national and international accounting standards. These bodies have had much to say in the recent past on accounting issues as they seek to explore how business-reporting models can best be employed. In some cases this has included recent pronouncements on how electronics impact on the production, dissemination and use of accounting data, though these have to date been few. As discussed in Chapter 1, reports are being produced for the FASB (final version due later in 1999) and CICA (final version due in late 1999) and shorter comments have been made in the UK (on the production of preliminary statements and expensing of costs relating to Web usage). Other national standard setters have yet to make public comments on these issues.

**5.7.3 Database Providers**

1915 There are a number of major financial information database providers. These include global providers, such as Reuters, Moody's Investor Services, Bloomberg, Financial Times, Disclosure, and Dow-Jones. There are also many national providers, such as Extel (UK), Hoppenstedt (Germany), Hugin Online (Nordic countries), Bolagsfakta (Sweden), Infotel, (Spain), Cerved, and R&S-Mediobanca (Italy). These providers typically take existing

<sup>124</sup> For example, with PricewaterhouseCoopers' involvement in FpML.

1920 printed financial statements, extract the necessary information from the financial statements in a consistent form, make whatever adjustments they deem necessary to accommodate national differences in financial reporting, and place the information into various information databases. The database providers fulfil a very important role in financial analysis and facilitate the smooth and efficient workings of the capital markets. It is therefore important to recognise the continued value such intermediaries can play in the future business reporting environment.

1925 The interests of the database providers are closely tied to the realities of the reporting environment for financial information. The submission of Mr Chester Murray, Managing Director – Europe of Moody’s Investors Service, to the recent IASC discussion paper, *Shaping IASC for the Future*, is revealing. In his submission, Mr Murray notes:

1930 *As capital funds more frequently flow across national borders, and as capital markets worldwide assume a more important role in financing economic activity, institutional investors are increasingly faced with the challenge of evaluating and comparing international investment opportunities. Accounting provides a language that facilitates these comparisons in that it attempts to translate economic reality into a measurable, quantifiable presentation of financial condition and performance. ... To the extent that different financial reporting standards may distort such comparisons, investors have to put additional effort into the analysis and temper their conclusions.*

1940 *Moody’s and other market participants have developed adjustments that permit reasonable comparison of financial results under any number of different accounting conventions. However, the process of standardization can provide meaningful efficiencies to such analytical efforts could contribute to reduced risk-premiums ... and could also speed the ongoing globalisation of capital markets. Importantly, the trend toward improved disclosure and descriptive management information is at least as important in furthering analytical efforts as is the global harmonization of accounting practices.*

1945 *... We believe that in order to win the broadest possible acceptance, the accounting conventions developed by the IASC will need to meet the needs of the analytical and investment communities for:*

*Full and consistent disclosure of financial information relevant to investors;*

1950 *Consistent valuation ...*

*A limited amount of reporting options ...*

*Limited year-on-year changes in accounting practices ...*

*One globally accepted format for presentation<sup>125</sup>*

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<sup>125</sup> Source [www.iasc.org.uk/docs/cl42.pdf](http://www.iasc.org.uk/docs/cl42.pdf) We have not reproduced sections of this quotation, indicated by “...”. The omitted words do not change the meaning.

1955 A key role is played by the financial information database providers in achieving consistency, comparability and understandability of data formats that facilitate the extraction and use of financial data for subsequent integration into decision-making tools. This function is largely independent of the source accounting reports produced by the reporting entities, but is very valuable nonetheless.

#### 5.7.4 Regulators

1960 A number of regulatory bodies with interests in financial information have already become involved in the ways in which this data is produced, disseminated, and used electronically. Given their remits as custodians of this data in many jurisdictions, this is not surprising.

1965 An example includes the SEC, which is heavily involved in managing the production and dissemination of electronic accounting data via EDGAR. The SEC is, however, becoming more involved in how this data is used electronically by becoming more active in pursuing perceived misuses of financial data and those who attempt to manipulate capital markets using electronic data.<sup>126</sup>

1970 Other regulators around the world are also becoming active in this area including the Australian Securities and Investments Commission (ASIC), the Toronto Stock Exchange, Spanish securities regulator (CNMW), the Deutsche Börse, the Austrian registrar of companies and the COB (France) (amongst others) who have each made pronouncements on the submission or use of electronic accounting data in various ways. Other regulators, such as the UK Stock Exchange and the national filing agency, Companies House, have remained largely quiet on this subject to date, though it is certain many have active projects in this area that will become more visible in the near future.

#### 5.7.5 Corporations

1980 The production, dissemination, and use of accounting data involve a number of parties who have varying inputs to the procedures to be followed in different jurisdictions, but core to any process is the source of the accounting data – the reporting corporate entities. In most jurisdictions around the world all corporate entities are required to produce accounting data of some form to be publicly available. This information is almost always retrospectively produced and subject to detailed guidance as to how it should be collated and disseminated, however, the reporting entities frequently are free to make many choices as to how this data will be presented to a user – even if they can do little to control when it is to be made available.

1990 Electronic means of producing accounting data have been available to all sizes of organisations for many years. Many corporations have also become efficient users of their own data for internal management purposes. Despite these facts there has been very little development of electronic means to disseminate this data to their various external stakeholders until relatively recently. A number of very large businesses have experimented with the production of annual accounts via CD-ROM, though the numbers still doing so are

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<sup>126</sup> See, for example, the recent restrictions placed on the issuing of Internet 'free stock' - [www.sec.gov/news/webstock.htm](http://www.sec.gov/news/webstock.htm)

very small. As we discussed in Chapter 3, over the last few years many more corporations have begun to use the Web as a means of distributing accounting data.

1995 Corporations are wary of distributing their detailed accounting data electronically, citing concerns over loss of competitive advantage and cost as key issues. It is noticeable, however, that the Web is now providing many more corporations with the opportunity to disseminate their data in cost effective ways and, in some cases (e.g., USA SEC and Canadian listed companies, German Neuer Markt listed companies, etc.) they are required to provide at least some accounting data in electronic formats for statutory reporting requirements.

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### 5.7.6 Auditors

The role of the auditor is common across many jurisdictions. They play a critical role in the confirmation of the production of accounting information usually relating to retrospective statutory reported information.

2005 In order to improve the efficiency of the audit function many auditors have adopted computerised procedures in the collection, examination and confirmation of accounting information. These changes have partly been brought about by the greater use of computerisation in the production of accounting data, thereby forcing the auditors to handle non-paper-based accounting systems, but also as a result of the drive to improve the efficiency of the audit function without the loss of quality in the audit opinion.

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Whilst the audit function is therefore largely retrospectively focused, as a profession they are already well placed to become more involved in the production, dissemination and use of accounting data. A recent study looking at the possible roles of auditors in the future suggested that they are ideally placed to benefit from greater use of electronic means to disseminate and use accounting information as they are currently well regarded, in the main, as the providers of assurance on accounting data<sup>127</sup>. This report suggested auditors should seek to provide a wider range of assurance services related to electronic accounting information.

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## 5.8 STANDARDS MODELS

### 5.8.1 Introduction

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Accounting standards set by the IASC or by national standards setters are constructed at a relatively high level of abstraction. Typically, accounting standards are not highly prescriptive in terms of presentation detail. Many standards allow for variation in application between corporations. Accounting standards, by and large, do not concern themselves with the *presentation* of accounting information but with accounting principles and the determination of accounting numbers. If disclosure items are required by a particular accounting standard, there is frequently no guidance on *how* the item is to be disclosed. Standards are set by standards organizations that follow a deliberative, almost quasi-legislative, standards development model.

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<sup>127</sup> Elliott Report.

- 2030 Contrast this with the setting of standards in the information technology arena<sup>128</sup>. For most IT standards, abstraction is inappropriate. The TCP/IP<sup>129</sup> standards must enable millions of disparate computers to seamlessly interact with each other. Such a standard *cannot* allow for variation. IT standards are typically, then, set at a relatively high level of detail and precision.
- 2035 The nature of standard setting in the IT arena varies widely in that there are many alternative ways that IT standards are set. At one end of a continuum are “de facto” standards. One corporation sets these standards and the marketplace accepts the standards either because the proprietary standards meet the needs of the entire industry<sup>130</sup> or because of the dominance of the corporation<sup>131</sup>. At the other end of the continuum are IT standards
- 2040 set under the auspices of the International Standards Organization (ISO) or one of the national standards setting organizations that is a member of the ISO. The standard for SQL (Structured Query Language) is an example of a standard that has been developed within and accepted by the ISO. Between these two points are standards developed by ad-hoc consortia<sup>132</sup>, standards developed within the framework of relatively informal
- 2045 organisations<sup>133</sup>, and standards under the umbrella of more formal consortia such as the W3 Consortium<sup>134</sup>.

**Global reporting and global standards:** By definition, electronic reporting—at least on the Web—is global in nature. There is only room for one global standard for the exchange of financial and related information in the long term. If this premise is accepted, the current

2050 model of development of financial reporting standards by the IASC would not work. A model where International Accounting Standards are applied by national accounting organisations with national differences, however small, will not work in the global environment of the Web. For the foreseeable future, it is therefore likely that standards for electronic reporting will need to be voluntary in nature. If a company wishes for its

2055 information to be more readily communicated to stakeholders, it would report using the global reporting language. If it does not wish to communicate with the global audience, it would not follow the global standard.

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<sup>128</sup> Ferné, G. (1995) ‘Information Technology Standardization and Users: International Challenges Move the Process Forward’ in B. Kahin & J. Abbate (eds), *Standards Policy for Information Infrastructure*. Cambridge, Mass: MIT Press, pp. 455-465. ; Rutkowski, A. M. (1995) ‘Today’s Cooperative Competitive Standards Environment and the Internet Standards-Making Model’ in B. Kahin & J. Abbate (eds), *Standards Policy for Information Infrastructure*. Cambridge, Mass: MIT Press, pp. 594-600. ; Kahin, B., and Keller, J. H. (eds). (1997) *Coordinating the Internet*. Cambridge: Mass: MIT Press.

<sup>129</sup> TCP/IP is the suite of protocols that determine how the Internet interoperates.

<sup>130</sup> For example, the Centronics standard for printer ports or the SoundBlaster standard for sound cards.

<sup>131</sup> For example, Microsoft’s Windows operating system.

<sup>132</sup> For example, the standard for FpML developed by JP Morgan and Coopers and Lybrand discussed in Chapter 3.

<sup>133</sup> For example, Internet “RFCs” developed within the Internet Engineering Task Force (IETF) or the Dublin Core standard developed by an informal grouping of interested parties. The Dublin Core is likely to migrate to a more formal level such as an ISO standard.

<sup>134</sup> For example, the “Recommendations” of the W3C or the standards of the European Computer Manufacturers Association (ECMA). JavaScript migrated from a proprietary, de facto standard to ECMA Script under the auspices of the ECMA.

### 5.8.2 A Consortium Model

2060 We believe that the development of a global Business Reporting Language is beyond the  
scope of the IASC or any of the national accounting standards setters. Accounting standards  
setters do not have the technical expertise internally to develop IT standards. Nor do we  
believe that any single national standards setter could successfully develop what would, by  
the very nature of the Web, be a global standard. We consider that a consortium approach  
2065 to the development of BRL standards is appropriate. A consortium could bring to the task  
financial resources, expertise and needed credibility. Consortia are common in many areas  
of Web standards setting. Consortia develop most of the proposals that are submitted to, for  
example, the W3C.

Which organisations might be involved in such a consortium? There are a number of  
possible candidates:

2070 **Global analysts:** Global information intermediaries and analysts<sup>135</sup> need cost-  
effective access to high quality information that they can quickly acquire, aggregate,  
and disseminate. The information intermediaries are likely to be interested in being  
involved in the development of global standards for the presentation of financial and  
related information. We believe that it would be possible to enter into an agreement  
2075 with an information intermediary that gave them exclusive rights to employ the  
intellectual content in building information databases and at the same time protect  
the public interest in enabling universal access to the protocols.

**Software companies:** The promulgation of a global Business Reporting Language  
would be an important element in the wider electronic commerce arena. As  
2080 discussed above, a BRL would enhance the visibility of corporations and raise trust  
in both business-to-business and business-to-consumer electronic commerce. It is  
likely that software companies such as Microsoft, which is already promulgating its  
XML-based “BizTalk” reporting framework, Netscape/AOL, Sun and IBM would  
value participation in the development of a global standard. These corporations are  
2085 closely involved in the development of unofficial and official standards in  
eCommerce.

**ERP:** While the focus of this report is on annual and more frequent financial  
reporting, it can be seen that these standards may go on to form part of business-to-  
business accounting transaction communication. The FpML standards for financial  
2090 instruments, for example, are designed to accommodate exchange of information  
between market players at the transactional level. It is at this level that ERP  
(Enterprise Resource Planning) software companies such as SAP, Baan, JD  
Edwards, and Oracle are interested and all have active programs underway to build  
XML-based standards for information exchange. Again, this can be seen as a part of  
2095 eCommerce, albeit at a lower level than may interest the software companies listed  
in the previous paragraph.

**IOSCO:** It is conceivable that national securities regulators will be interested in the  
development of a global Business Reporting Language upon which they can build

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<sup>135</sup> For example, Reuters/Dow Jones, Financial Times, Bloomberg or Moodys.



2100 national reporting protocols comparable to that of the SEC's EDGAR system. The  
2105 SEC itself is likely to be interested in understanding how the EDGAR system could  
migrate from SGML to XML. As discussed above, frameworks such as XML allow  
national extensions and substitutions to a global standard.

**National Standards Setters:** The development of a global Business Reporting  
2105 Language should be seen as a co-operative effort of the broader accounting  
community. A BRL that accommodates national differences in accounting standards  
is neutral. Organisations such as the FASB, AARF, and ASB could be involved in a  
consortium.

**International Accounting Firms:** It is in the interests of the "Big Five" global  
2110 accounting firms and other major accounting firms to be able to develop  
communication modes that enhance the global visibility of their audit and  
consulting clients. At the same time, the Big Five firms have the technical expertise  
necessary to develop a global Business Reporting Language.

## 5.9 CONCLUSIONS AND RECOMMENDATIONS

2115 Various electronic business-reporting technologies have been discussed in this chapter.  
Many challenges exist when implementing these reporting technologies and these  
challenges will compound as the use of these technologies increase. These challenges cause  
concerns for the quality of financial reporting if they go unchecked.

2120 A range of options to deal with these challenges is reviewed in the chapter, primarily with  
a view to improving the quality of electronically disseminated information. A point to be  
made here is that other developments in accounting, such as quality global financial  
reporting standards, will have to be simultaneously made for dealing with the challenges of  
Web-based business reporting reviewed in the chapter.

2125 Most options reviewed in the chapter are related to the quality of reporting, with some  
addition discussion of assurance services to maintain such reporting quality. We make the  
following summary recommendations based on the challenges and options discussed in the  
chapter:

- A. That the IASC and other relevant international bodies concerned with corporate  
financial reporting such as the IOSCO, IFAC, and the national standards setters:
- 2130
- 1) set up a task force to review the state and impact of electronic dissemination  
of business reporting;
  - 2) develop a framework for standard setting for Web-based business reporting;  
and
  - 3) commission research to assist in its duties.

- 2135 B. The task force on Web-based business reporting, to achieve the best possible results in terms of quality of financial information, should focus its attention to:
- 1) evaluate the forms of de facto standardisation occurring in Web-based business reporting that may assist it in identifying the best possible modes of reporting on the electronic format;
  - 2140 2) where necessary, establish a code of conduct and, eventually, a set of standards for Web-based business reporting that does not stifle progress in this area;
  - 3) coordinate with IFAC to establish codes of conduct or standards of assurance for Web-based business reporting; and
  - 2145 4) coordinate with IOSCO and national securities regulators to ensure that quality issues pertaining to Web-based business reporting be immediately brought to the attention of the preparers in all jurisdiction and, once the aforementioned codes and standards are in place, ensure that those codes and standards are enforced on all entities deriving benefit from the global
  - 2150 markets.

## 6 CONCLUSION

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This report discusses the consequences of Web-based business performance reporting. The main purpose of this report is to examine and explore the rapidly changing world of Web-based business reporting. Web-based business reporting technology is moving very quickly. New developments are taking place at a phenomenal pace never seen before in any field of societal development. Some of the developments labelled in the report as “old” were in existence only a few years and are still being used. However, they are outdated and have been overtaken by much more sophisticated products and will quickly disappear. People will perhaps not even remember them as they did for many other products of the agricultural and industrial eras. The only difference this time is that it took them only a few years to become obsolete as compared to many years or centuries for other prior developments. This amplifies the pace of change the electronic medium has brought to the world of business. As pointed out in the report, the Web may soon take-over the role of primary medium of reporting from the print medium.

Given the pace of change, it is not easy to make absolute recommendations about Web-based business reporting. However, given its increasing prominence in business reporting, and within that financial reporting, it will be foolhardy for the global financial reporting policy makers to ignore it because its consequences to the accounting profession will be substantial. Some would contend that Web-based business reporting is an issue that does not fall within the domain of accounting, and would suggest that its issues be left to the policy makers of electronic or information technology. Indeed, a lot of the technology issues will be very much outside the grasp of accountants. Just as we left the issues of technology of the print medium with the printing experts we will have to allow other experts to exercise their expertise in their relevant domains within Web-based business reporting. However, since financial reporting is an aspect of accounting, the accounting profession and their policy makers will have to exercise their expertise to ensure that not only that an essential aspect of their profession remains within their jurisdiction, but also that, in the interest of the users of financial information, they provide their expertise to ensure that the electronic forms of reporting produce quality financial and business reporting information.

We consider that action is necessary at two levels. At the first level, the highly variable form of reporting on the Internet currently employed by corporations around the world leads to a less than satisfactory user experience. We recommend creation of a Code of Conduct to address improvement of the quality of Web-based business reporting. At the next level, there is a need for a Business Reporting Language that will allow users to find and, once having found, understand and interpret financial and business reporting information. Such a language should cater for the needs of both humans and intelligent software agents. A Business Reporting Language should be designed to cater for the life-cycle of value of financial and business information.

To take the aforesaid steps, the accounting policy makers need to understand that Web-based business reporting has expanded the frontiers financial reporting. This report does not

2195 suggest that these dimensions be kept under check, as it is not within the power of the  
accounting profession to do so. However, it suggests that the Web-based business financial  
reporters need a code of conduct or a set of standards for reporting to ensure dissemination  
of quality information. To make this happen, the auditors of financial information also need  
2200 a set of codes or standards for their assurance services in a Web-based business-reporting  
environment. These codes or standards will have to be such that they do not stifle progress  
but at the same time they ensure that the qualitative characteristics of financial information,  
enshrined in the many conceptual frameworks of financial reporting around the world, are  
met.

The IASC and the national accounting standard setters have their respective conceptual  
frameworks for financial accounting. These conceptual frameworks are generally quite  
harmonised and the qualitative characteristics of financial information outlined in these  
2205 conceptual frameworks are very similar. The conceptual frameworks have been reasonably  
efficient for setting accounting standards in recent times. However, one issue to note is that  
the current generation of conceptual frameworks were established for an industrial world  
with national boundaries, and not for the information age with globalisation, i.e., no  
national boundaries. With respect to the qualitative characteristics, we feel that the  
2210 frameworks are still efficient, as the qualitative characteristics desired by the users seem not  
to have changed. Some of the qualitative characteristics, mainly timeliness, relevance and  
completeness of information, are in fact enhanced by the availability electronic data on a  
global scale. Despite such enhancement, one major concern we have is that there will be  
less human intervention in the judging of quality of information when advanced  
2215 technologies such as intelligent agents are put into greater use. For example, unlike  
financial analysis by humans where the analyst can decide qualitatively what goes into the  
analyses intelligent agents will load large amounts of data without any qualitative  
judgments. In this respect, the codes and standards suggested above will be necessary to  
ensure that only quality information is available to these non-human agents.

2220 There are other issues coming to light as well through the enhanced use of electronic  
systems. These include whether the definition of assets is adequate for reporting the  
information technologies that firms use. For example, the criterion of control by entities  
used for determining whether an asset should be accounted for by an entity may not allow  
recognition of cyberspace assets such as the intelligent agents. Although the accounting  
2225 profession has considered accounting the for intangibles for many years, it is now time that  
it took some concrete steps in this respect because more assets will be in the intangible  
form in the future. Another concern is that the qualities of comparability and reliability of  
data may suffer in the absence of standards for Web-based business reporting.

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## APPENDIX A

### PERSONS AND ORGANISATIONS CONSULTED

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Whilst the authors acknowledge the various contributions to this report made by those listed below they wish to point out that the contents of this report can in no way be attributed to any individual listed here and their names are provided solely as an expression of gratitude for their time and advice given.

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## APPENDIX B

### DATA COLLECTION INSTRUMENT

<b>Company's Name</b>
<b>URL Address</b>
<b>Format</b>
- html/pdf etc
<b>No. of Steps from Home Page(to reach FS)</b>
<b>Chairman's Message</b>
- existence (1=yes, 0=no)
- signature (1=yes, 0=no)
- photo (1=yes, 0=no)
- audio (1=yes, 0=no)
- other
<b>Corporate Information</b>
- existence (1=yes, 0=no)
- organization structure (1=yes, 0=no)
- customer profile (1=yes, 0=no)
- employee profile (1=yes, 0=no)
- photo (1=yes, 0=no)
- audio presentation (1=yes, 0=no)
- other
<b>BOD &amp;/or Officers</b>
- names (1=yes, 0=no)
- photos (1=yes, 0=no)
- personal portfolio (1=yes, 0=no)
- other
<b>Year-in-Review</b>
- existence (1=yes, 0=no)
- other
<b>Financial Summary</b>
- URL
- existence (1=yes, 0=no)
- for how many years(19XX - 19YY)
- descriptive/numerative
- frequency(for every X years)
- other
- comments
<b>Auditor's Report</b>
- URL
- existence (1=yes, 0=no)
- signature (1=yes, 0=no)
- link internally/externally
- other
- comments
<b>Management Report</b>
- URL
- existence (1=yes, 0=no)
- signature (1=yes, 0=no)
- charts (1=yes, 0=no)
- other
- comments

<b>Notes to the Accounts</b>
- URL
- existence (1=yes, 0=no)
- other
<b>Changes in Equity Statement</b>
- URL
- existence (1=yes, 0=no)
- other
<b>Statement of Directors</b>
- URL
- existence (1=yes, 0=no)
- signature (1=yes, 0=no)
- audio presentation (1=yes, 0=no)
- photos (1=yes, 0=no)
- link to other statements (1=yes, 0=no)
- link to .....(eg. P&L, B/S) (1=yes, 0=no)
- other
<b>Segmental Report</b>
- URL
- existence (1=yes, 0=no)
- segmentation format
- frequency
- other
<b>Proxy Statement</b>
- URL
- existence (1=yes, 0=no)
- format
- other
<b>Financial Ratios</b>
- URL
- existence (1=yes, 0=no)
- no. of ratios shown
- type of ratios eg. liquidity, profitability
- charts (1=yes, 0=no)
- other
<b>Non-Financial Information</b>
- URL
- type of info. shown
- comments
<b>News of Latest Products &amp; Services</b>
- URL
- existence (1=yes, 0=no)
- graphics (1=yes, 0=no)
- online feedback (1=yes, 0=no)
- other
<b>Vision Statement</b>
- URL
- existence (1=yes, 0=no)
- included in other statements
- other

<b>Balance Sheet</b>
- URL
- existence (1=yes, 0=no)
- broad classification (1=yes, 0=no)
- sub-classification (1=yes, 0=no)
- items(from sub-classification) (1=yes, 0=no)
- no. of years shown
- link to notes (1=yes, 0=no)
- other
<b>Profit &amp; Loss Statement</b>
- URL
- existence (1=yes, 0=no)
- no. of years shown
- details of P&L items shown
- link to notes (1=yes, 0=no)
- other
<b>Cash Flow Statement</b>
- URL
- existence (1=yes, 0=no)
- classification of broad items(eg. financing) (1=yes, 0=no)
- no. of years shown
- link to notes (1=yes, 0=no)
- other

<b>Download</b>
- URL
- existence (1=yes, 0=no)
- format
- reader required
- availability to download reader on spot (1=yes, 0=no)
- other
<b>Share Price Performance</b>
- URL
- numerative/descriptive
- charts (1=yes, 0=no)
- other
<b>Link to Home Page (1=yes, 0=no)</b>
<b>Others</b>
- languages support (1=yes, 0=no)
- Web site for different countries (1=yes, 0=no)
P/S : No. of steps from Home Page means that the no. of clicks required

## APPENDIX C

### EDGAR FINANCIAL STATEMENT TAGS<sup>136</sup>

**Commercial and Industrial Companies  
Article 5 of Regulation S-X**

<u>Tag</u>	<u>Item Number</u>	<u>Item Description</u>
<DOCUMENT>		Enclosing tag for all document information
<TYPE>		
<DESCRIPTION>	OPT	Comment field for document
<TEXT>		Start document text.
<NAME>	RWA	Required for coregistrant filings. Identifies coregistrant name.
<MULTIPLIER>	RWA	Identifies units of data. Applies to all monetary values except per share data. DEFAULT IS 1
<CURRENCY>	RWA	Identifies currency of financial data. DEFAULT IS U.S. DOLLARS
<PERIOD-TYPE>		Identifies period type for each column; e.g., YEAR
<FISCAL-YEAR-END>		Identifies fiscal year end for each column; e.g., DEC-31-1991
<PERIOD-END>		Identifies period end for each column; e.g., DEC-31-1991
<EXCHANGE-RATE>	RWA	Identifies multiplier of currency
<CASH>	5-02(1)	Cash and cash items
<SECURITIES>	5-02(2)	Marketable securities
<RECEIVABLES>	5-02(3)(a)(1)	Notes and accounts receivable-trade
<ALLOWANCES>	5-02(4)	Allowances for doubtful accounts
<INVENTORY>	5-02(6)	Inventory
<CURRENT-ASSETS>	5-02(9)	Total current assets
<PP&E>	5-02(13)	Property, plant, and equipment
<DEPRECIATION>	5-02(14)	Accumulated depreciation
<TOTAL-ASSETS>	5-02(18)	Total assets
<CURRENT-LIABILITIES>	5-02(21)	Total current liabilities
<BONDS>	5-02(22)	Bonds, mortgages, and similar debt
<PREFERRED-MANDATORY>	5-02(28)	Preferred stock - mandatory redemption
<PREFERRED>	5-02(29)	Preferred stock - no mandatory redemption
<COMMON>	5-02(30)	Common stock
<OTHER-SE>	5-02(31)	Other stockholders' equity
<TOTAL-LIABILITY- AND-EQUITY>	5-02(32)	Total liabilities and stockholders' equity
<SALES>	5-03(b)1(a)	Net sales of tangible products
<TOTAL-REVENUES>	5-03(b)1	Total revenues
<CGS>	5-03(b)2(a)	Cost of tangible goods sold
<TOTAL-COSTS>	5-03(b)2	Total costs and expenses applicable to sales
and		revenues

<sup>136</sup> From Appendix E of the SEC EDGAR Filing Manual (June 1999). A small number of tags have not been shown, for the sake of clarity.

<OTHER-EXPENSES>	5-03(b)3	Other costs and expenses
<LOSS-PROVISION>	5-03(b)5	Provision for doubtful accounts and notes
<INTEREST-EXPENSE>	5-03(b)(8)	Interest and amortization of debt discount
<INCOME-PRETAX>	5-03(b)(10)	Income before taxes and other items
<INCOME-TAX>	5-03(b)(11)	Income tax expense
<INCOME-CONTINUING>	5-03(b)(14)	Income/loss continuing operations
<DISCONTINUED>	5-03(b)(15)	Discontinued operations
<EXTRAORDINARY>	5-03(b)(17)	Extraordinary items
<CHANGES>	5-03(b)(18)	Cumulative effect - changes in accounting principles
<NET-INCOME>	5-03(b)(19)	Net income or loss
<EPS-BASIC>	5-03(b)(20)	Earnings per share - primary
<EPS-DILUTED>	5-03(b)(20)	Earnings per share - fully diluted
</TEXT>		
</DOCUMENT>		

## ABOUT THE AUTHORS

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