

# DATA AND TECHNOLOGY: TRANSFORMING THE FINANCIAL INFORMATION LANDSCAPE

Investor Perspectives



CFA Institute





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# Foreword

Although there has been much discussion about the role of technology in the filing of documents with regulators, this report looks at how technology can be harnessed to reform the financial reporting process end to end.

The report examines the effects of data and technology on the finance function<sup>1</sup>—the capture/collection of data; their management, analysis, and use in the production and presentation of financial reports; and the audit of those reports. Next, we study the use of technology in the delivery of financial data to all parties in the information supply chain and in the consumption of financial information by investors, regulators, and other users. That is, we assess how data, data analytics, and technology may potentially transform the financial reporting process to make it more effective, resulting in greater transparency for investors.

Finally, we outline our vision for broader and deeper use of structured data—that is, across all reports in their entirety—to bring about untold efficiencies and transparency for all users.

Many thanks to Glenn Doggett, CFA, who reviewed and provided input to this report.

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<sup>1</sup>Including external reporting; risk and compliance; treasury and tax; investor relations; and transaction processing, costing, planning, and control.





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# Executive Summary

— **Big** data and advances in technology have been dominating the discussions of many financial executives in recent years. In fact, the 18th Annual Global CEO Survey from PricewaterhouseCoopers (PwC) highlights the impact of the digital revolution on business, reporting that CEOs are concerned by the speed of technological change.<sup>2</sup> The survey states,

But CEOs no longer question the pace of technological change, as they learn to deal with it. The majority of CEOs believe that investments in digital technologies have created value for their business, and around 80% say that mobile technologies and data analytics are key strands of their strategy.

But standard setters appear to be lagging behind the rest of the industry in terms of embracing data and technology in financial reporting. Monga and Chasan illustrate how some think that

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<sup>2</sup>PwC, *18th Annual Global CEO Survey: A Marketplace without Boundaries? Responding to Disruption* (January 2015): [www.pwc.com/gx/en/ceo-survey/2015/assets/pwc-18th-annual-global-ceo-survey-jan-2015.pdf](http://www.pwc.com/gx/en/ceo-survey/2015/assets/pwc-18th-annual-global-ceo-survey-jan-2015.pdf).

current disclosure requirements have led to annual reports reaching epic lengths that are difficult for users to consume and lead to added complexity in financial reporting.<sup>3</sup>

As we note in our paper “Financial Reporting Disclosures: Investor Perspectives on Transparency, Trust, and Volume,”<sup>4</sup> today’s financial reporting system is based on paper and associates higher word or page counts with increased complexity and neglects the ways that data and technology can improve the quality of information and investors’ access to it. The current system presumes that information is consumed by humans; in other words, it assumes a human consumption model, not a machine-readable format.

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<sup>3</sup>Vipal Monga and Emily Chasan, “The 109,894-Word Annual Report,” *Wall Street Journal* (2 June 2015): <http://blogs.wsj.com/cfo/2015/06/02/the-109894-word-annual-report>.

<sup>4</sup>Mohini Singh and Sandra J. Peters, “Financial Reporting Disclosures: Investor Perspectives on Transparency, Trust, and Volume,” CFA Institute (July 2013): [www.cfainstitute.org/learning/products/publications/ccb/Pages/ccb.v2013.n12.1.aspx](http://www.cfainstitute.org/learning/products/publications/ccb/Pages/ccb.v2013.n12.1.aspx).

## Our Approach

We examine the current financial reporting process from end to end and assess the inefficiencies in the system and the ways that data, data analytics, and technology may potentially improve or even transform that process. We also examine financial information consumption by investors, regulators, and other users.

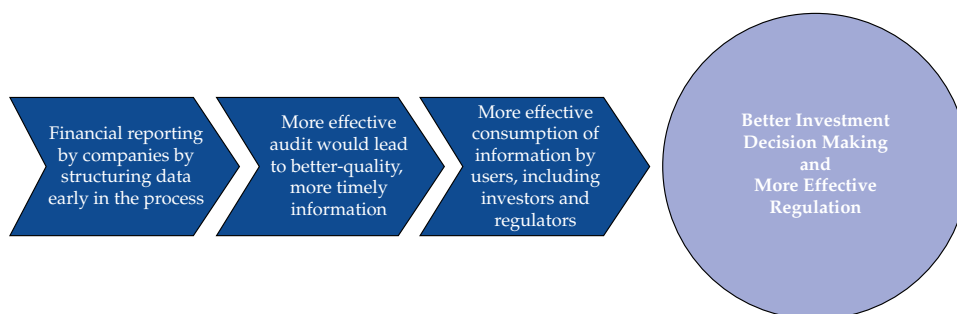
We believe that the use of data and technology can result in a more effective and efficient overall financial reporting process in which investors—including CFA Institute members (primarily analysts and investors)—receive more transparent, better-quality information on a timely basis. As **Figure 1** shows, such changes would lead to more effective investment decision making.

## Our Observations

### Companies

Let's start at the beginning of the financial reporting process with companies. The current manual report assembly and review processes used by companies require both time and money. These processes can be enhanced through the standardization of data, formulas, and presentation of financial information across disparate data sources or software silos and through the effective implementation of disclosure management applications. When data are standardized, these applications are able to pull information from disparate data sources to write automated reports, which enables streamlining of current labor-intensive

**Figure 1. Effects of Structured Data on Investment Decisions and Regulation**



processes. Such standardization not only saves time and resources for companies but also reduces errors in data because of less manual intervention.<sup>5</sup>

To achieve these benefits, companies need to structure data early in the reporting process and start thinking of structured data as a form of communication, not merely as a form of delivery.

However, companies continue to view structured reporting as a compliance exercise and cost center rather than as a useful tool. As a result, most companies do not structure their data into a machine-readable format at their source—that is, early in the financial reporting process. Instead, they follow a two-tier process whereby filers prepare their interactive data as an additional step after their financial statements have been prepared simply to fulfill their regulatory filing needs. Consequently, structuring is not producing the intended results (i.e., increasing the speed and frequency with which financial information is prepared, reported, analyzed, and used and reducing the costs).

## ***Auditors and Regulators***

Structuring data early in the process would not only benefit companies but would also allow auditors to use audit data analytics to make the audit more efficient and potentially provide users with a better quality and greater granularity of financial information with greater reporting frequency and possibly a higher level of assurance. It also allows regulators to use data analytics to cull structured data from financial reports to identify violations of financial reporting regulations.

## ***Investors***

Investors also seek structured quantitative data—combined with management explanation of results in a quantitative and qualitative fashion—which are not bounded by the document in which the information is contained.

With the availability of technology to sift through data and crunch the numbers, investors could be in a better position to perform faster and better analysis. When some of their finite resources are freed up, analysts can not only research more companies but can also take a closer look at the companies they already follow, which would support better-informed investment decisions. Greater efficiency with higher-quality investment decisions is a win for capital markets. Structured data could also bring bigger and better

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<sup>5</sup>PwC, “Disclosure Management: Streamlining the Last Mile,” PricewaterhouseCoopers (March 2012): [www.pwc.com/gx/en/xbml/pdf/pwc-streamlining-last-mile-report.pdf](http://www.pwc.com/gx/en/xbml/pdf/pwc-streamlining-last-mile-report.pdf).

opportunities in small- to mid-cap companies by making it easier and less costly to cover these companies.<sup>6</sup>

## **Policymakers**

To achieve these changes, regulators need to improve access to and searchability of information within the regulator's primary source documents. This step would serve to increase the use and the integrity of primary source information. Currently, data providers extract information and provide it in a substantially more useful format than existing regulatory filings, resulting in the greater use of such secondary sources by users. Improvements by regulators could even disintermediate the data providers and thereby truly democratize information.

Structuring data early in the financial reporting process and improving the access to and searchability of information in regulatory filings could produce a virtuous circle. It would help companies by reducing costs and enabling them to analyze the data more quickly and effectively to function more efficiently; it would help investors by allowing them to make more informed investment decisions; and it would bring greater investment to companies that perhaps were not so closely followed by investors previously. All of this would ultimately lead to a more efficient and transparent capital market.

Policymakers' embracing the disclosure overload narrative without giving consideration to the current technological context has seemed paradoxical to investors who would like to see how technology could be used to challenge this notion and be deployed to improve, rather than reduce, the provision of information.

Recognition by accounting standard setters and policymakers of the changes in technology (i.e., in the connectivity and delivery of data) and the impact such changes have on the perceived quality and relevance of their decisions is essential for the sustainability and relevance of financial reporting and accounting standard setting in the eyes of investors. Investors believe standard setters and policymakers need to integrate into their decisions the effect changes in technology have, or could have, on capturing, managing, analyzing, presenting, and delivering financial data. In sum, because much of the information provided must be mandated by policymakers, they need to incorporate a view regarding technology in their work.

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<sup>6</sup>To do so, the XBRL (eXtensible Business Reporting Language) implementation issues that have been faced by preparers and users—such as data quality issues—need to be addressed.

## Our Vision

The purpose of this paper is twofold: (1) to argue, on behalf of our membership, for greater efficiencies within the current inefficient system, as we have done previously; and (2) to outline our vision for a future that brings greater transparency to investors. Our vision is for broader and deeper use of structured data.

Structured reporting is most effective when it is applied broadly to all aspects of reporting—that is, to earnings releases and all regulatory filings, such as Form 8-K,<sup>7</sup> proxy statements, tax reporting, and so forth.

We believe that, over time, taxonomies could be developed for other forms of reporting, such as integrated reporting, to broaden the use of structured data. Indeed, there have been discussions about introducing eXtensible Business Reporting Language (XBRL)—one form of structuring—to cover corporate actions.

Finally, structuring needs to apply not only to all forms of reporting but also to all companies. There have been discussions in different jurisdictions of smaller entities not using structured data in their filings, which prevents automated analysis of these companies for investors who invest across companies big and small. The availability of financial information in a standardized format also benefits smaller entities looking for greater investment in their companies.

Regulators need to require structured reporting beyond just the financial statements and allow investors a deeper look into annual reports and other reports by applying structuring to all reports in their entirety. For example, in Europe, it has been suggested that only the face of the annual financial statements needs to be structured. However, simply tagging the values on the face of the financial statements is insufficient. It also should be required to separately tag the values in the notes to the financial statements because this information is extremely valuable to investors.

Furthermore, text block tagging should be required for the management commentary, each note to the financial statements, and each significant accounting policy. The user can then perform text analysis using the text block tagged information rather than having to resort to the paper report, increasing ways to use unstructured data.

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<sup>7</sup>An 8-K is a report of unscheduled material events or corporate changes at a company that could be of importance to the shareholders or to the US SEC.

Such changes would bring greater transparency to users. For example, users would have a better understanding of non-GAAP measures because structuring that information requires the use of formulas. Broader and deeper use of structured data across all reports in their entirety would bring about untold efficiencies and transparency for all users.

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# 1. Financial Reporting

We have observed that when it comes to financial reporting, standard setters appear to be having yesterday’s conversation in their discussions of “information overload.” The current conversation is focused on a paper-based system that associates higher word or page counts with increased financial reporting complexity. It entirely misses how data and technology can be used to provide investors with high-quality information and how technology is currently being used by investors to search and consume that information.

This missing recognition of the importance of data and technology prompted us to conduct this study—to examine the current financial reporting process from end to end and to assess the inefficiencies in the system and the ways that data, data analytics, and technology may potentially improve or even transform that process. That is, we investigate the effects of data and technology on the process—the capture/collection of data; their management, analysis, and use in the production of financial reports; and the audit and delivery of those reports to various parties. Finally, we examine the consumption of financial information by investors, regulators, and other users.

We believe that the impact of data and technology on these various aspects of financial reporting could lead to a more effective and efficient overall financial reporting process that would lead to investors—including CFA Institute members (primarily analysts and investors)—receiving more transparent, better-quality information on a timely basis. This improvement would, in turn, lead to more effective investment decision making, as demonstrated in Figure 1.

## Companies

### *Need to Embrace Structured Data and Technological Advancements*

Big data and advances in technology have been dominating the discussions of many financial executives in recent years. One reason for the increased focus is that the sheer volume of data—including structured, semistructured, and unstructured data—has exploded. According to IBM, each day, more than 2.5 quintillion bytes of data are generated. It is estimated that 90% of the data that exists in the world today was created over the past

two years.<sup>8</sup> The discourse on data ranges from data privacy and the challenges of protecting data from cyberattacks to use of data in increasing a company's competitiveness in the marketplace. Indeed, in today's world, data have become such a central and powerful aspect of the financial marketplace that participants in the 2012 World Economic Forum in Davos affirmed data to be a new class of economic asset.<sup>9</sup>

The primary characteristics of the emerging data-driven economy are the volume, velocity, and variability of data. And managing large quantities of ever-changing data can be complex and demanding. Accordingly, 94% of executives in a global survey identify complexity as their greatest challenge, with information management ranking as one of the top two reasons.<sup>10</sup> Ironically, information management is also cited by 84% of executives in the research as the most popular way to manage complexity.<sup>11</sup>

We believe that the finance function can play a pivotal role in addressing the challenges of managing the volume, velocity, and variability of data. Furthermore, the finance function can deploy data analytics to derive value from data.

Currently, producing a company's financial information remains a very labor-intensive process because "most companies still depend upon disparate systems to store and deploy much of the needed data—and those systems simply can't 'talk' to each other. They speak different languages."<sup>12</sup> Duplication of data, formulas/rules, relationships, and presentations of financial information across disparate data sources or software silos inhibits collaboration on analytics and hinders transparency.

For companies to draw value from data most effectively, they need to standardize the data they collect. Standardization of data, formulas/rules, and presentation enhances access to the data for corporate managers by allowing them to pull information from disparate sources,<sup>13</sup> assemble the information, and view the analytical results in their software application. The data are then reusable across different applications by different parties for different purposes—for example, internal and external audit.

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<sup>8</sup>Robert J. Capriotti, "Big Data Bringing Big Changes to Accounting," *Pennsylvania CPA Journal* (1 June 2014): [www.picpa.org/articles/picpa-news/2014/06/01/big-data-bringing-big-changes-to-accounting](http://www.picpa.org/articles/picpa-news/2014/06/01/big-data-bringing-big-changes-to-accounting).

<sup>9</sup>Nick Bilton, "At Davos, Discussions of a Global Data Deluge," *New York Times* (25 January 2012): <http://bits.blogs.nytimes.com/2012/01/25/at-davos-discussions-of-a-global-data-deluge>.

<sup>10</sup>KPMG, "Confronting Complexity: Research Findings and Insights," KPMG International (May 2011).

<sup>11</sup>Jeanne E. Johnson, "Big Data + Big Analytics = Big Opportunity," *FinancialExecutive* (July/August 2012).

<sup>12</sup>Mike Willis, "XBRL: Leveraging the Internet for Corporate Reporting," PricewaterhouseCoopers (2003): [www.pwc.com/gx/en/xbml/pdf/corporate\\_reporting.pdf](http://www.pwc.com/gx/en/xbml/pdf/corporate_reporting.pdf).

<sup>13</sup>Standardized data could, for example, help with consolidation across operating units with different accounting systems.



Current manual report assembly and review processes require both time and money. These company costs are ultimately borne by investors. Standardization of data could significantly help companies with the writing of financial reports. A PwC report puts it best:<sup>14</sup>

Companies routinely close their books in a matter of days; yet they take weeks to publish reports, thus deferring management and stakeholder analyses and decisions. A significant driver of the delay: the information contained in corporate warehouses and consolidation applications is commonly cut and pasted, rekeyed, or manually transferred into word processing and spreadsheet applications used for report assembly and review process steps.

These processes can be enhanced through data standardization and the effective implementation of disclosure management applications. Disclosure management applications provide report-writer functionality through word processing and spreadsheet applications commonly used in manual reporting steps. When data are standardized, these applications are able to pull information from disparate data sources to write automated reports, such as Form 10-K.<sup>15</sup> Data standardization also allows

- automated report validation, whereby validation checks are automated to notify the user of errors;
- automated XBRL reports; and
- automated benchmarking.

Disclosure management applications have access to EDGAR (the Electronic Data Gathering, Analysis, and Retrieval system) and other publicly available sources of XBRL data that allow them to pull the information from different sources into a peer analysis spreadsheet.

Data standardization and implementation of disclosure management applications enable streamlining of current manual report assembly and review processes. This will not only save time and resources for companies but also reduce errors in data because of less manual intervention. Indeed, the aforementioned PwC report states,<sup>16</sup>

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<sup>14</sup>PwC, “Disclosure Management.”

<sup>15</sup>A Form 10-K is an annual report required by the SEC that gives a comprehensive summary of a company’s financial performance.

<sup>16</sup>PwC, “Disclosure Management.”

Leading practices for disclosure management application implementations have resulted in approximately 30% reductions in cost and time while enhancing reporting control environments, improving information quality and timeliness.

## **Benefits to Companies**

Stantial illustrates how such changes (i.e., data standardization and the use of disclosure management applications) can translate into real benefits for companies today.<sup>17</sup> He first provides an overview of the current financial reporting process United Technologies Corporation (UTC) uses to file its quarterly Form 10-Q:<sup>18</sup>

There are hundreds of locations worldwide that capture [UTC's] underlying financial data in a multitude of ERP [enterprise resource planning] systems. This information is then fed into Hyperion Financial Manager (HFM), where it is consolidated at the segment level. The segments then upload consolidated HFM information to the corporate office, where the overall consolidation of UTC's results is done. Needed information is then manually extracted from HFM using reports or retrieves and entered into a Word document that will become the form 10-Q.

Other information needed for the 10-Q that is not contained in HFM is received through various supplemental files that are e-mailed to corporate headquarters where the information is again manually extracted and entered into the Word document. As data is manually manipulated, there is an ongoing validation required that is constantly checking that the information conforms with certain rules and reconciles with its source.

As the 10-Q approaches completion in Word, it is disseminated to all the involved parties such as legal counsel, CFOs and business segments for review, commentary and approval. Changes from this review group are manually entered into the Word document and again proofed back to the source documents. When complete, the Word document is provided to the filing agent for conversion to HTML, after which a full proof to the underlying Word document is made before the 10-Q is filed in EDGAR.

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<sup>17</sup>John Stantial, "ROI on XBRL," *Journal of Accountancy* (1 June 2007).

<sup>18</sup>The SEC Form 10-Q is a comprehensive report of a company's performance that must be submitted quarterly by all public companies to the Securities and Exchange Commission.

The entire quarterly reporting process takes an average of 845 hours. As data is extracted from the financial reporting system and is managed between multiple documents, nearly 20% of those hours are spent on the non-value activities of proofing, reading, checking and footnoting. Additionally, it is this manual aspect of the process that has the most potential for errors.

Stantial then describes the future financial reporting process that incorporates data standardization. In this process, the entire 10-Q is created as a report in Hyperion Financial Manager (HFM), where the information is standardized.

At no point will the information be taken out of HFM and placed into Word or another document format. For management's review and approval, an HFM report will be run and disseminated. Any changes will be made directly in HFM and will automatically update the report.

When the review is complete, the financial statement files will be generated from HFM. . . . By not manually extracting the data and working in multiple documents, the effort to proofread, review, check and add footnotes is not required. This eliminates 150–200 hours of labor from the quarterly reporting process, while concurrently strengthening the overall process controls.

In short, data standardization

- simplifies the process of collecting data,
- reduces the cost of preparing and publishing information,
- increases reliability by reducing errors,
- allows presentation in any reporting format,
- provides more timely information for management,
- simplifies information access and allows data to be retrieved more quickly,
- enhances distribution of information without loss of data integrity and without regard to systems and platforms,
- provides more information for analysis, and
- allows for quicker and deeper analysis of information.

## Changing Role of Accountants

The rise in data analytics could change the role of the accountant from report writer to business partner because of more time spent analyzing the company's results, including analyzing patterns or potential issues. Pulling data from disparate sources into one view allows patterns to be recognized faster. Indeed, technology could be used by accountants to identify risks, support specialized decision making in real time, and improve forensic accounting. That is, the use of data analytics allows firms to enhance enterprise risk and financial management and enables machines and human beings to do what they are best at (i.e., collation of information for the former and analysis for the latter).

Furthermore, accountants' roles would include effective stewardship of data assets. Accountants would have to ensure that controls are in place to enforce data standards to achieve data consistency across the business to allow access and analysis on a repeated basis by different parties. Moreover, accountants would have to help companies value their data assets through the development of valuation methodologies and would thus need to develop different skills through increased education in technology and analytic methods.

So far, data management and analytic tools have helped companies, especially financial institutions, meet their regulatory reporting requirements. But there is a need for greater changes in culture so that companies can not only achieve regulatory and compliance objectives but also improve internal reporting, mitigate risk, combat fraud, and so much more.

In fact, the future holds endless possibilities. For example, there are cases of data being collected by companies but not analyzed for years. Moreover, information that is captured may not be limited to financial information but may relate to reporting on sustainability and ethics. And what opportunities will unstructured data, such as emails or social media, bring to accountants, managers, and auditors?

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## 2. Evolution of Audit Processes

In this section, we examine how audit processes may be transformed or replaced through the use of data and technology. An evolution of the audit in this direction is already taking place, but more can be done to provide investors with more timely, better-quality, and more granular financial information, with possibly a higher level of assurance for investors as they perform their financial analyses.

A recent Deloitte survey found that technology and data analytics should play larger roles in audits of publicly traded companies.<sup>19</sup> In the survey, “Audit of the Future,” respondents strongly indicated that auditors also need to expand their use of technology, with 84% of preparers, 76% of audit committee members, and 70% of users agreeing. The report states,

Audits play a fundamental role in the capital markets, contributing to investors’ ability to make informed and confident decisions. However, our latest survey of more than 250 financial statement preparers, audit committee members, and financial statement users reveals a growing consensus that the traditional audit must evolve in response to rising expectations for quality, information access, and timeliness.

### Need for Standardization

Audit processes include the acquisition, validation, analysis, and reporting of information from a broad range of sources with differing levels of granularity. Current processes have little standardization of information, resulting in significant manual efforts required to acquire, validate, and analyze the information for the audit.

Standardization of financial information by companies is therefore key. By standardizing the data requested by auditors—both external and internal—companies will be able to automate and replicate the information request process, thereby reducing the amount of time and effort required to provide the requested data. Similarly, other consumers of the standardized information (such as creditors) also would benefit if a company chose to share those data with them.

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<sup>19</sup>Deloitte, “Audit of the Future” (2015): [www2.deloitte.com/content/dam/Deloitte/us/Documents/audit/us-aers-the-future-of-audit-survey-and-innovation-report-infographic-new.pdf](http://www2.deloitte.com/content/dam/Deloitte/us/Documents/audit/us-aers-the-future-of-audit-survey-and-innovation-report-infographic-new.pdf).

Just as companies can use data analytics to leverage value from standardized data, auditors can use audit data analytics to leverage value. Greater use of audit data analytics would help auditors to combine information from disparate data sources for their analyses, visualize financial performance and other data, and identify patterns and anomalies. In addition, it could be used to

- identify risk associated with accepting or continuing an audit,
- identify risks of material misstatements,
- detect fraud,
- identify higher-risk transactions,
- perform analytical procedures in response to the auditor’s assessment of these risks, and
- assess management’s representations by analysis of financial transactions.

Indeed, we believe data analytics should be integrated into the entire audit life cycle—risk assessment, scoping, fieldwork planning, execution, monitoring, and reporting.<sup>20</sup> It would lead to improved coverage of transactions and enhanced risk focus and insight and support professional skepticism.

## Audit Data Standards

The mission of the American Institute of CPAs (AICPA) Assurance Services Executive Committee (ASEC) is to ensure the quality, relevance, and usefulness of information or its context for decision makers and other users by

- identifying and prioritizing emerging trends and market needs for assurance and
- developing related assurance methodology guidance and tools to capitalize, for example, on emerging technologies affecting the business information supply chain, covering both internal and external reporting.

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<sup>20</sup>Paul Byrnes, Tom Criste, Trevor Stewart, and Miklos Vasarhelyi, “Reimagining Auditing in a Wired World,” AICPA (August 2014).

An audit data standard (ADS) working group has been established to help develop ADSs that will contribute to the efficiency and effectiveness of the audit process. The purpose of ADSs is to create a standardized data model through standardization of the format for fields and files commonly requested for audit and other related purposes. It would allow management, internal auditors, and external auditors to obtain accurate data in a usable format following a repeatable process. The data could be used for enhanced analytics that would improve the timeliness and effectiveness of the audit process.

These voluntary standards represent leading practices that well-designed accounting and financial reporting systems are capable of adhering to. The first publication of ADSs addresses the general ledger and accounts receivable subledger. The intention is to add ADSs for other subledgers.

## Evolution of Audit Processes

Greater research is required by both accounting firms and academics on how audit procedures may be changed—not just to improve the audit process but also to allow it to truly evolve. Although some movement toward such evolution has taken place, much more can be achieved.

Improvement of current processes leads to greater effectiveness and, hence, the same level of assurance at a lower cost. Currently, this result is being achieved, for example, through greater use of computer-assisted audit tools (CAATs) to replace manual audit activities, such as choosing statistical samples and detecting suspicious transactions. In addition, back-end tasks, such as analytical procedures, journal entry testing, and bank confirmations, are being performed remotely or by third-party providers. But transforming the process can lead to an even higher level of assurance. One change that could take place is in the level of auditing. For instance, auditors may work toward analyzing 100% of the population instead of using current sampling techniques.

Internal audit has been evolving faster than external audit. Some internal audit departments perform continuous auditing. Technology is used to monitor and audit transactions in real time, which allows internal auditors to detect issues when—or close to when—they occur, which is a tremendous enhancement for internal controls.

External audit should also move in this direction. Continuous auditing that alerts auditors to problems as early as possible allows auditors to adapt their audit plans accordingly. It

also smoothes the workload; issues can be addressed remotely throughout the year rather than only during the busy season.

Automating the audit function would require the following:

- **Increased education.** Accountants and auditors would need increased education in technology and analytic methods.
- **Updated auditing standards.** Existing standards do not address information presented in electronic format transmitted over the internet or what firms are doing with continuous auditing/continuous monitoring. Auditing standards/guidance would be needed on applying data analytics, continuous auditing, and other auditing technology.<sup>21</sup>
- **Reexamination of certain concepts.** A reexamination of concepts—such as materiality, independence, and what constitutes sufficient audit evidence—would be needed.
- **Changes in the timing and frequency of the audit.** Financial statements may be produced/issued on a more frequent—perhaps even a continuous—basis. If so, audit assurance may also be required on a continuous basis.
- **Assurance on the system.** There would need to be assurance as to the completeness and accuracy of the system producing the information as well as the data themselves.
- **Enhanced security.** Auditors would need to ensure the integrity of online information by signing audit reports through an electronic signature.

Of course, automation of the audit function and the application of continuous auditing raise a number of questions:

- Are companies protective of their data? Will companies allow ongoing access to their systems?
- What is the desired skill set for dispensing continuous auditing services?

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<sup>21</sup>The International Auditing and Assurance Standards Board (IAASB) has established a Data Analytics Working Group. This working group has begun its information-gathering activities, taking into account developments in information technology and their effect on financial statement audits and how these may affect the International Standards on Auditing (ISAs). The IAASB needs to ensure that the ISAs support the use of new and emerging techniques in a way that supports audit quality. Consideration will be given to whether the ISAs may be viewed as prohibiting audit data analytics and where changes in the ISAs could be helpful in the use of analytics and their benefits and challenges.



- Is the view of audit firms that continuous auditing/monitoring is costly and the pay-back period quite lengthy?
- Should continuous auditing/monitoring tools be used in particular areas, such as accounts payable, before being applied in a more elaborate manner?
- Can audit opinions be maintained on a more regular or an ongoing basis?
- What could organizations, such as the AICPA and the Public Company Accounting Oversight Board, do to facilitate the adoption of continuous auditing/monitoring?

The rise in analytics will change the role of the auditor to higher-end tasks, such as analysis. In the same way, the internal audit function will change from a focus on transaction-based analytics to macro-level analytics that identify patterns and risk trends.

## What Will the Future Look Like?

External reporting currently represents a subset of information management uses internally. Companies may start sharing information intended for internal management with external stakeholders. But questions remain:

- Will assurance be provided on the internal information?
- Does the legal culture present constraints to progress in the auditing process?
- What will the audit report look like? Will the audit opinion be developed on a true and fair basis? The current audit report addresses financial statements taken as a whole rather than as individual components. Will that change?

Instead of focusing on historical financial data, companies and auditors may expand into nonfinancial information, such as operational and strategic data, and into information that is increasingly real time and even predictive.

There may come a time when on-demand, real-time information is available that allows users to customize searches and drill down for further information. GAAP-compliant, static financial statements could be replaced with raw data to be dynamically extracted and examined at the user end. **Exhibit 1** lays out the potential financial reporting changes that would benefit investors.

### Exhibit 1. Financial Reporting: The Coming Changes

Current State	Future State
Historic	Real time
Periodic	On demand
Composed of statements	Composed of custom searches and reports
Based on financial measures	Based on financial and nonfinancial items
Backward looking	Predictive

Then, there are questions as to what opportunities unstructured data may bring to an audit. Will auditors sift through unstructured data, such as emails? Will the source and variety of data continue to expand? Could, for example, social media information have relevance to an audit? And with so much data available, will a certain degree of pollution (i.e., bad data) be acceptable for many applications?

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## 3. Structured Data

CFA Institute has long supported the use of structured or standardized data. Investors seek structured quantitative data—combined with management’s explanation of results in a quantitative and qualitative fashion—which are not bounded by the document in which the information is contained.

### XBRL: Benefits and Challenges

Although other forms of data standardization exist,<sup>22</sup> we discuss XBRL here because it has been required by regulators for financial reporting purposes. XBRL provides a standardized, interactive, computer-based framework for financial reporting and financial statement generation. In the past decade, this reporting framework has proven to be a promising technological advance for companies. It also provides key benefits in the form of increased efficiency, transparency, and comparability in the delivery of financial information to all parties in the information supply chain, such as investors and regulators, regardless of their varying needs. In other words, it allows for the democratization of information.<sup>23</sup>

In basic terms, XBRL reporting replaces traditional text-based financial reporting with a machine-readable report, which not only aides companies internally—as outlined in the previous section—but also enables filing companies to deliver financial data directly in a computer-readable format. The recipients of those filings use software applications that convert the filings back into a set of human-friendly financial reports that include all required columns, hierarchies, and links. In this way, financial data become searchable and easily comparable. The values entered can be integrated into other analytic applications or used to compare financial statements over time or among companies.

The strength of the XBRL framework is in the strength of the taxonomy, or list of fields, that companies use when completing their filings. The taxonomy is essentially the dictionary of elements, or tags, that represent the concepts/fields of reporting that regulators

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<sup>22</sup>Other forms of structured data exist. For example, FpML (Financial products Markup Language) is the business information exchange standard for electronic dealing and processing of financial derivative instruments. It establishes a protocol for sharing information on and dealing in swaps, derivatives, and structured products. All categories of OTC derivatives will eventually be incorporated into the standard that is managed by the International Swaps and Derivatives Association.

<sup>23</sup>CFA Institute, *eXtensible Business Reporting Language: A Guide for Investors* (April 2009).

require in financial statement filings. A robust, well-defined, and stable taxonomy can provide for greater precision and comparability between company reports than can be found in the various text formats companies use, which can be full of inconsistencies.

## Benefits

There have been challenges with the implementation of XBRL— especially issues over data quality that have caused many analysts and investors to continue to obtain companies' financial information for use in their analyses from third-party data providers. However, we need to remind ourselves that the information from data providers is not error free.

Indeed, some maintain that the error rate in XBRL data is lower than in any other dataset and that the narrative that has developed that XBRL data are not consumable is greatly exaggerated. A letter from the US House Committee on Oversight and Government Reform to SEC Chair Mary Jo White supports this point:<sup>24</sup>

Now, comparative studies are able to show that XBRL tagged information is the most complete and most accurate source of company data and commercial databases may differ from the original numbers reported by companies due to typos, missing values, [and] not-up-to-date values.

Of course, if we address the challenges in XBRL implementations that we enumerate here, we can ensure that investors receive consistent, comparable, good-quality XBRL information in a timely manner, which would enable a wider audience to have access to data at a lower cost than is available today.

## *Amount and Granularity of Data*

Other benefits to investors include the availability of both the overall amount and greater granularity of data, which is demonstrated in the PwC review of Morgan Stanley's 31 December 2013 10-K. The study illustrates that the Bloomberg dataset included a total of 670 elements (including the balance sheet, income statement, comprehensive income, cash flows, changes in equity, notes, tables, and so forth) whereas the XBRL data set included 7,015 elements.

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<sup>24</sup>US House Committee on Oversight and Government Reform, letter to Mary Jo White (10 September 2013): <http://oversight.house.gov/wp-content/uploads/2013/09/2013-09-10-DEI-to-White-re-Interactive-Data-Rule.pdf>.

As to the overall amount of XBRL data available today, Hal Schroeder, Financial Accounting Standards Board (FASB) board member, puts it best:<sup>25</sup>

Today, all public companies are detail-tagging their financial statements with XBRL. We are at a point now where we have more than 51 million discrete facts tagged with XBRL in the SEC EDGAR database for more than 89,000 filings by approximately 10,000 filers.

## Regulators and Creditors

Other benefits—such as more effective regulation, which we address later in the paper—would also ensue.<sup>26</sup> Indeed, creditors have started using XBRL information to reengineer their credit applications and monitoring procedures. Anderson and Ott<sup>27</sup> discuss the benefits of Standard Business Reporting (SBR) programs:<sup>28</sup>

For instance, Standard Business Reporting, or SBR, a common, simple, digital language for business-to-government reporting, has worked well in the Netherlands since 2008. It allows a Dutch firm to submit its financial accounts to tax authorities, business registers and banks as an input to credit applications. If adopted elsewhere, SBR could significantly reduce information costs.

The Solvency II Directive is an EU directive that codifies and harmonizes EU insurance regulation—primarily concerning the amount of capital that EU insurance companies must hold to reduce the risk of insolvency. The European Insurance and Occupational Pensions Authority (EIOPA) has determined that harmonized EU-wide Solvency II reporting in an XBRL format is “crucial to ensure consistent implementation of European regulatory and supervisory frameworks to support EIOPA’s goal to improve the efficiency and consistency of the supervision of financial institutions across Europe.”<sup>29</sup>

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<sup>25</sup>R. Harold Schroeder, member of the Financial Accounting Standards Board, remarks at the XBRL US Conference, Las Vegas (24 September 2013).

<sup>26</sup>Benefits also include automatic data validation and an automated audit trail.

<sup>27</sup>Jeffrey Anderson and John Ott, “Freeing Europe’s Small Businesses,” *New York Times* (19 November 2013): [www.nytimes.com/2013/11/20/opinion/freeing-europes-small-businesses.html?\\_r=0](http://www.nytimes.com/2013/11/20/opinion/freeing-europes-small-businesses.html?_r=0).

<sup>28</sup>Standard Business Reporting (SBR) is a group of international programs instigated by a number of governments to reduce the regulatory burden for businesses. XBRL is central to the standardization used in SBR.

<sup>29</sup>See <http://archive.eiopa.europa.eu/publications/solvency-ii-reporting-format/index.html>.

## Challenges

### *Seen as Compliance Exercise*

Many challenges, however, impede the successful implementation of XBRL. Chief among the challenges is that XBRL reporting is seen by companies as a compliance exercise and a cost center rather than as a useful tool. As a result, most companies do not tag in a machine-readable format at their source. Instead, they follow a two-tier process whereby filers prepare their interactive data as an additional step after their financial statements have been prepared simply to fulfill their regulatory filing needs. Consequently, XBRL is not producing the intended results (i.e., increasing the speed and frequency with which financial information is prepared, reported, analyzed, and used), nor is it producing the eventual reduction in costs.

The reason for this problem may be unfamiliarity with the use of XBRL, what companies can accomplish through its adoption, and the resources required to incorporate it into a company's workflow at the beginning of the process. Most firms remain unaware of the benefits of standardization and, therefore, resist incorporating it into their workflow. As previously noted, companies can use standardized XBRL data for financial management, enterprise risk management, and other purposes. We do not believe concerns over the cost of tagging software are justified. The cost of the software is approximately \$1,000, as reported by Stantial.<sup>30</sup> The article also states that the hours involved in tagging XBRL documents are reasonable.

This lack of awareness of the purpose and benefits of XBRL extends to the investor community, which is illustrated by a CFA Institute member survey conducted in December 2011.<sup>31</sup> Per the survey results, 53% of respondents were not aware of XBRL, whereas 38% were aware of XBRL but not up to date on its usage in financial reporting. Only 9% were aware of it and of plans for its usage in financial reporting.

Unfortunately, misconceptions regarding the compliance costs of XBRL are quite widespread. In 2015, the US House of Representatives passed HR 37 "Promoting Job Creation and Reducing Small Business Burdens Act," including Section 701, "Exemption from XBRL Requirements for Emerging Growth Companies and Other Smaller Companies," which proposes to exempt public companies with less than \$250 million in annual revenue

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<sup>30</sup>Stantial, "ROI on XBRL."

<sup>31</sup>See [http://www.cfainstitute.org/Survey/cfa\\_institute\\_member\\_survey\\_xbrl.pdf](http://www.cfainstitute.org/Survey/cfa_institute_member_survey_xbrl.pdf).

from reporting in the XBRL format in an effort to reduce compliance burdens and to provide emerging growth and small companies with capital to create jobs.<sup>32</sup>

HR 37 focuses on the cost increase of an outsourced, or “bolt-on,” service for producing the XBRL-formatted reports. The bill does not consider that the way a company implements XBRL reporting will directly affect its costs. When facing regulatory XBRL mandates, some financial executives have chosen to outsource the XBRL tagging and creation process (often viewing it only as a compliance requirement). This outsourcing approach is often perceived as bringing minimal disruption, but it also provides minimal potential benefit to the company. Other financial executives have taken a different implementation approach and realized net cost/time reductions by integrating and pushing the standardization earlier in their report assembly and review process. The costs (or savings) and benefits realized are largely dependent on how financial executives view XBRL mandates: narrowly, as a simple compliance requirement, or more broadly, as a business reporting supply chain standardization opportunity to streamline and cost effectively enhance a broad range of compliance processes.

Benefits will ensue when financial information tagging takes place within companies at the beginning of the report-assembly process and when companies treat the machine-readable XBRL document as their financials. Indeed, in the future, when such benefits are actualized, tags may be developed for nonfinancial items as well.

## Data Quality

Globally, regulations requiring public companies to provide information in an XBRL format have steadily increased. And similar to prior technology changes, the implementation has faced some challenges. In the United States, the quality of the information provided in the reports is one such challenge.

The XBRL taxonomy associated with US GAAP has many thousands of data elements from which a company may select, which has led companies to tag similar, or even comparable, items differently. Apart from inconsistent data modeling, other data quality issues that affect the automated analysis of XBRL data include scaling, unnecessary use of extensions (discussed next), and input errors (e.g., incorrectly using negative values).

Thus, although most US public companies provide financial information using XBRL to the US SEC, automated analysis of financial data using XBRL data has been limited

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<sup>32</sup>The bill has not progressed any further; the White House has issued a veto threat to the overall legislation.

because analysts and investors are concerned about the accuracy, consistency, and reliability of the XBRL data. Although these inconsistencies and errors do not result in the company filing being rejected by EDGAR, the errors result in inaccurate, incomprehensible, or unworkable files that hinder or prevent automated analysis of the data. As a result, XBRL has not fulfilled its potential to increase the speed, accuracy, and usability of financial disclosure and broaden the availability of financial data for analysis.

The letter from the Committee on Oversight and Government Reform to US SEC Chair Mary Jo White sums it up best:<sup>33</sup>

...the SEC's interactive data filings still contain significant errors, which lead to skepticism about usability of the data. Errors in the data and deviations from the designed taxonomy reduce the value of the data, necessitating additional effort to utilize the data. While interactive data files should be as accurate and credible as plain-text filings, the SEC's implementation of the rule failed to include sufficient guidance and proper enforcement. Utilization of the data is limited by concerns of reliability, but the SEC has not issued even one comment letter on any of the more than 1.4 million errors identified. According to a recent study from Columbia University, the SEC's poor data quality is the result of the "reticence or inability of regulators and filers to ensure that the interactive data are accurate and correctly tagged," which "hinders the current usefulness of XBRL-tagged information."

These data errors are not caused by the XBRL standard. They are the responsibility of the public company issuers that produce the financial disclosures. The errors may occur internally during the tagging process by the company or by third-party XBRL tagging vendors.

Companies can gain greater control over the XBRL data by shifting away from outsourcing data tagging to third-party XBRL tagging vendors and toward handling it internally through built-in application implementations (i.e., disclosure management applications) that may bring about quality improvements. Furthermore, to address the data quality challenges, any mistakes in the XBRL financials need to be picked up by regulators and addressed through proper enforcement mechanisms, such as comment letters.

To increase the use of the XBRL data by investors, analysts, and other consumers of financial statement data, it is necessary to substantially eliminate these inconsistencies and

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<sup>33</sup>US House Committee on Oversight and Government Reform (2013).



errors in the application of XBRL. Toward that end, XBRL US partnered with several filing agencies and the AICPA to create the Center for Data Quality.<sup>34</sup>

The efforts of this initiative are directed by the Data Quality Committee (DQC), whose membership represents software providers, data aggregators, institutional investors, the accounting profession, and academia. User-focused organizations on the DQC include CFA Institute, Bloomberg, Calcbench, S&P Capital IQ, and Credit Suisse HOLT. The DQC focuses on data quality issues that adversely affect data consumption and analysis by users and prioritizes issues based on input from them.

The DQC oversees the process of developing guidance and validation rules intended to remove inconsistencies from XBRL reports, including the solicitation of public input to the proposed guidance and rules before the recommendations are finalized. And ultimately, the DQC provides updates and insights to the US SEC and FASB staffs.

In July 2015, the DQC released its first set of items for public comment. It released seven items for comment based on earlier reviews conducted by XBRL US and other members of the Center for Data Quality. These items are intended to clean up reporting practices on a range of straightforward topics, such as the tagging of dates, and inappropriate use of negative values. Although these rules pertain specifically to filings with the SEC, it is our hope that other jurisdictions will develop comparable rules.

## Extensions

Chief among the data quality challenges is the ability of the managers of filing companies to manipulate reporting by customizing or “extending” the core dictionary of fields (that is, the taxonomy) of the reporting format. If companies extend the defined fields excessively, the XBRL platform loses the vitally important benefit of comparability.<sup>35</sup>

Indeed, in the United States, some users report that approximately 70% of data elements can be directly mapped onto the US GAAP taxonomy and 30% are extensions. Such excessive use of extensions results in the need for manual intervention by users: Analysis of extensions must be manually executed, whereas analysis of a taxonomy element can be automated across companies.

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<sup>34</sup>The Data Quality Committee believes that many of these errors are the result of ambiguous prescriptive guidance for preparers. In addition, the documents that provide the existing guidance, which in some instances are ambiguous or unclear, are scattered amongst the FASB, XBRL US, and the SEC websites and are not easily accessible or searchable for filers.

<sup>35</sup>Extensions are not permitted in some reporting programs.

Regulators need to curtail the current excessive use of extensions. CFA Institute believes in a structured approach to the use of extensions. In “eXtensible Business Reporting Language: A Guide for Investors,” CFA Institute states:<sup>36</sup>

Individual extensions should be limited to those rare situations in which an item unique to that firm exists and the information about it does not fit into any of the concepts within the standard taxonomy or extension. We strongly encourage reporting companies to look first for the appropriate tag within the existing taxonomy before turning to a custom extension. If such a tag does not exist, we believe an extension should be allowed but within a well-defined framework so that no extension corrupts other financial statement relationships. Simply put, the automated relationships required by the computer remain: When a custom tag is inserted, the relationships remain intact and the numbers continue to sum up correctly.

The DQC plans to provide guidance for the appropriate use of extensions. The challenge in developing such guidance will be balancing the need for comparability between companies and transparency in that companies need to provide entity-specific information they believe is essential in telling their story.

Per the aforementioned CFA Institute member survey, 60% of respondents think that companies should have limited ability to create new tags in order to reflect unique business activities or transactions not defined by the current XBRL taxonomy and 28% think that companies should not be able to create new tags (i.e., only the current XBRL taxonomy should be used and tags should be predefined according to current financial reporting standards).

## **Plural Taxonomies**

Standard setters around the world have been creating a standardized XBRL taxonomy. However, the existence of different XBRL taxonomies presents challenges. First, the US GAAP and International Financial Reporting Standards (IFRS) XBRL taxonomies are not compatible. Significant differences exist between the scope of tags included in the IFRS and US GAAP taxonomies. For example, unlike US GAAP, IFRS does not cover specific industry disclosures. Consequently the IFRS taxonomy does not cover these industry common practices. Second, some national jurisdictions—including some

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<sup>36</sup>CFA Institute, “eXtensible Business Reporting Language.”

EU member states—have their own reporting taxonomies to reflect local accounting and other reporting regulations.

## Conclusion

CFA Institute has established guiding principles for the development of an effective and appropriately elastic XBRL framework. These five principles are based on preferences CFA Institute members revealed in surveys and research conducted by CFA Institute and include the development of regulation-based core taxonomies that are applicable to the variety of industries involved but also limit customization. We also encourage maximum comparability, full adoption of XBRL, and free access for the general public. Finally, the principles encourage regulators to incorporate XBRL into their updating processes as accounting and reporting standards evolve.

We believe that addressing the aforementioned challenges—by all constituents, including users, preparers, and regulators—within this XBRL framework will maximize the benefits of XBRL to all parties.

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## 4. Unstructured Data

For more than a decade, the business world has been fascinated by big data. Some of these data are structured, but many are unstructured. Many forms of unstructured data exist, such as emails; social media data, including videos and pictures generated from such platforms as YouTube, Facebook, Twitter, LinkedIn, and Flickr; mobile data, including such data as text messages and location information; and website content.

Traditionally, investors have valued companies by analyzing financial statement data (structured and unstructured) and market data as well as such unstructured data as those found in earnings releases. Now, because of the availability of technology, analysts have identified all sorts of ways to mine unstructured data for useful correlations and other information that provide insights into the operations of companies.

Justin Zhen and Gregory Ugwi, cofounders of Thinknum,<sup>37</sup> say it best:

Analysts track how a company is doing in real time by monitoring product pricing changes for retailers, mobile app adoption for e-commerce companies, or updates to clinical trials for individual drugs in the case of pharmaceuticals. They study how route changes are affecting various airlines or track how unemployment trends are affecting companies across all sectors. It's been very interesting to see all the various ways creative hedge fund analysts are using our software.<sup>38</sup>

Although the data may be unstructured, it is necessary to structure your analysis of the data. Let's take text data as an example. How could one analyze comments made on analyst calls, news stories, or regulatory information? The traditional way is simply to read the words. However, this method is limiting given the sheer volume of data available. Therefore, the data need to be analyzed in a systematic way. One way is sentiment analysis—the process of computationally identifying and categorizing opinions expressed in a piece of text, especially to determine whether the writer's attitude toward a particular topic or product is positive, negative, or neutral.

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<sup>37</sup>Thinknum is a company that makes sophisticated financial models available to everyone on an open, distributed computing platform.

<sup>38</sup>Jason Voss, "If It Is on the Internet, It Can Be Analyzed," *Enterprising Investor* (6 October 2015): <https://blogs.cfainstitute.org/investor/2015/10/06/if-it-is-on-the-internet-it-can-be-analyzed>.

Furthermore, in the same interview, Zhen and Ugwi note that users are not interested in just data but rather in changes in data. What users need is the ability to track various data points and understand when these data points are deleted, updated, or added to the system for the first time—again, requiring the structuring of information.

In sum, structuring is essential to draw usefulness from unstructured data.

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## 5. Benefits to Investors

Regulators, such as the SEC, have adopted rules requiring companies to provide financial statement information in an interactive format intended to improve its usefulness to investors. This format enables investors to capture and analyze that information more quickly and at a lower cost. Any investor with a computer and an internet connection now has the ability to acquire and download interactive financial data that have, in the past, been available only to large institutional users. **Exhibit 2** lists the benefits to investors of structured data.

Former SEC Chairman Christopher Cox, in a November 2005 speech to the Securities Industry Association, says,<sup>39</sup>

Right now, thousands of people in financial firms across America are going through the time-consuming, laborious task of sifting through paper, text, and HTML reports. They're keyboarding data from static SEC reports into more useful formats, so they can actually use it. They need to do this if they want to compare companies and industries, and to fully understand an issuer's finances. Without that physical re-keying in of financial data, no analyst can begin to make sense of it.

We can completely eliminate this backbreaking, expensive, error-prone, natural-resource wasting task. It is so 20th century.

With interactive data, you can slice and dice the information like a chef at Benihana with a cube of Kobe beef. No more collating by the back-office staff. If you want to compare net income for 50 companies in one industry; or accounts receivable for 100 companies across three industries, or summon up financial ratios for all the companies on the S&P 500, you'll be able to do it instantly.

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<sup>39</sup>Christopher Cox, "Speech by SEC Chairman: Remarks before the Securities Industry Association," US SEC (11 November 2005): [www.sec.gov/news/speech/spch111105cc.htm](http://www.sec.gov/news/speech/spch111105cc.htm).

## Exhibit 2. Benefits of Structured Data

- 1 Improves financial statement accuracy
- 2 Improves productivity
- 3 Increases opportunity for higher returns
- 4 Allows for better risk management
- 5 Empowers the analyst

*Sources:* Schroeder (2013); R. Harold Schroeder, XBRL US Investor Forum: Improving Financial Analysis through Structured Data, Baruch College, New York City (4 November 2015); and Pranav Ghai and Alex Rapp, “Value of XBRL for Financial Analysis,” *Accounting Today* (12 January 2016).

## Improves Financial Statement Accuracy

Providing information in a structured format improves financial statement accuracy by eliminating the re-keying of information and, thereby, avoiding so-called fat finger errors—that is, errors from keying information in incorrectly.

It also avoids what Schroeder calls “misinterpretation errors.”<sup>40</sup> When different companies provide conceptually the same information in different disclosure layouts and with different captions, it is challenging for investors to compare that information.

## Improves Productivity

Schroeder draws on his own experiences to outline how structured data increase productivity by allowing analysts to spend less time on the collection of data and more on analysis.<sup>41</sup>

As a portfolio manager, I needed to receive data as efficiently as possible to populate my financial models. Those models were critical to performing “what if” analyses that ultimately supported our investment decisions.

<sup>40</sup>Schroeder (2013).

<sup>41</sup>Schroeder (2013).

With large pools of data and numerous analyses to perform, rekeying data was not the best use of our finite resources. Before the “age of electronically structured data,” either we had to use less data or we had to analyze fewer scenarios. Either way, resources were rationed; priorities had to be set. And I would argue that, to compensate for the resulting risks, the cost of capital was higher.

To illustrate, in developing my annual business plan, I was faced with a critical question: With finite resources, how many companies can I follow?

. . . In my case, the derived number was 150 companies. So here’s the problem: figuring for each company roughly 2,000 pages of press releases, supplemental reporting packages, Qs and Ks, along with various sell side analysts’ reports, that’s 300,000 pages per year. That works out to reading more than 51 pages per hour, 16 hours a day—allowing some time for sleep and personal hygiene—every day of the year!

Of course, I could—and did—spread this over several research analysts, but at a cost. As such, I’d always be looking for a more efficient mechanism to acquire the data needed for my analysis.

Ghai and Rapp enumerate how structured data allow for deeper, sharper analysis.<sup>42</sup> They look at investments in China:

A crucial issue for analysts evaluating risks and opportunities related to China is to understand both the magnitude of a company’s investment in China, and how it is changing over time. Now that companies tag their segment-level disclosures in XBRL, finding that answer becomes an instantaneous exercise.

Consider companies’ investment in property, plant and equipment (PP&E) in China for the years 2012-2014. We looked at over 20 US companies with at least \$250 million in PP&E in China for each of those years and took a deeper dive into them. Yes, the average company’s Chinese PP&E increased roughly 14 percent in that period—but largely because of Apple making large financial commitments to Chinese expansion. Exclude Apple from that sample, and the increase is only 4.6 percent.

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<sup>42</sup>Ghai and Rapp, “Value of XBRL for Financial Analysis.”



## Increases Opportunity for Higher Returns

With the availability of XBRL and technology to sift through data and crunch the numbers, investors could be in a better position to perform faster and better analysis. And when some of the finite resources are freed up, analysts can not only research more companies but also take a closer look at the companies they already follow—supporting better-informed investment decisions. And greater efficiency with higher-quality investment decisions is a win for capital markets.

XBRL could, therefore, bring bigger and better opportunities in small- to mid-cap companies. As Schroeder says:<sup>43</sup>

Typically, I was not willing to own more than a small percentage of any company. Given these limits, I simply couldn't invest enough absolute dollars in these smaller companies to justify allocating the needed research time.

XBRL changes that dynamic by making it easier and less costly to cover smaller market-cap companies. And my personal experience suggests there are higher-return opportunities in these companies—higher, that is, relative to more closely followed, larger-cap companies.

Indeed, structured data and technology could produce a virtuous circle. They help companies by reducing costs and allowing the companies to analyze the data more quickly and effectively to function more efficiently. They help investors by allowing them to make more informed investment decisions and bring greater investment to companies that perhaps were not so closely followed by investors previously. All of this ultimately leads to a more efficient and transparent capital market.

SEC Commissioner Kara M. Stein agrees:<sup>44</sup>

Furthermore, easily comparable and accessible data could have other significant benefits. For example, improving the quality of data available on smaller and medium size companies could lead to improved secondary market liquidity. Improved data and transparency on market quality statistics could empower small and large investors and benefit the market overall. In short, the digital revolution is requiring us to rethink and re-envision disclosure.

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<sup>43</sup>Schroeder (2013).

<sup>44</sup>Kara M. Stein, remarks at the SEC Speaks conference, Washington, DC (20 February 2015): [www.sec.gov/news/speech/022015-spchckms.html](http://www.sec.gov/news/speech/022015-spchckms.html).

## Allows for Better Risk Management

To illustrate how structured data could allow for better risk management, Ghai and Rapp take the example of the rising of the US dollar in global exchange markets in 2015 and how currency exchange rates will continue to be a powerful force in corporate earnings in 2016.<sup>45</sup>

XBRL gives financial analysts the power to understand how exchange rates might affect various sectors and companies more precisely. You can still take an “all filers” view of exchange rates and find that a stronger dollar is shaving a few cents off earnings per share at US companies. But you can also easily sub-group those filers by industry, or even by individual company—and then discover that the 10 businesses suffering the largest losses in cash thanks to exchange rates are all pharmaceutical or health care firms. The average firm lost \$0.04 per share on their cash position, and Johnson & Johnson suffered the most in 2015 with a pinch of \$0.11 per share.

## Empowers the Analyst

Ghai and Rapp explain how structured data empower the analyst by allowing easier analysis of disclosures:<sup>46</sup>

The juicy details in any financial statement—from hidden opportunities you want to uncover, to questionable risks the filer would rather not be asked—are in the footnotes. Every analyst knows this. But most analysts are unwilling and/or unskilled enough to brave the ocean of text in individual, 40,000-word (yes!) SEC filings and painstakingly trace back numbers buried in footnotes to relevant line-items elsewhere on the financial statement.

A more efficient way to analyze, the one that XBRL-tagged data allows, is to surface all that information in an interactive platform. This allows an analyst to compare footnote data for hundreds of filings, across companies or over time, and to connect the nuggets of data tucked away in those footnotes to the larger messages the filer is disclosing elsewhere.

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<sup>45</sup>Ghai and Rapp, “Value of XBRL for Financial Analysis.”

<sup>46</sup>Ghai and Rapp, “Value of XBRL for Financial Analysis.”

Now you can find the details on that debt number mentioned elsewhere and see when various notes will come due, or investigate exactly how operating income is changing in various business segments from year to year, or answer any number of other questions footnotes are famous for not answering easily.

## Globally Needed Improvements

### *Earnings Releases*

Earnings releases and supplemental reporting packages are the documents that most often move markets. But data from earnings releases remain unstructured, and XBRL versions are voluntary. We believe that requiring companies to tag their earnings releases, as well as requiring them to submit earnings releases to the SEC for dissemination before issuing press releases, will be beneficial for investors.

### *Management's Discussion and Analysis*

Some very rich data exist in the management's discussion and analysis (MD&A) section of filings.

Unfortunately, the MD&A section falls outside the scope of the XBRL mandate. Requiring this section and other numeric data to be tagged would open up a trove of valuable data for all investors.

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## 6. Role of Policymakers

Given the ability of data and technology to truly democratize information, leading to more effective capital markets, policymakers appear to be having yesterday's conversation in their discussions of "information overload." Monga and Chasan discuss the view that current disclosure requirements have led to epic lengths in annual reports that are difficult for users to consume, causing added complexity in financial reporting.<sup>47</sup>

The current conversation is focused on a paper-based system that associates higher word or page counts with financial reporting complexity. It entirely misses how data and technology can be used to provide investors with high-quality information and how, in today's world, technology is being used by investors to search through and consume that information.

Investors are voracious consumers of information, and they have the technology to sift through the information they receive to identify the data points most relevant to their analysis. They are looking for entity-specific information that emphasizes matters of importance and explains the delta over time. Investors are not looking for less information, just better-quality information for their financial analyses and investment decision-making processes. Simply put, for investors, there is no such thing as too much useful information.

### Lessons for Policymakers

#### ***Policymakers Need to Incorporate Technology into Thinking Process***

Policymakers' embracing the disclosure overload narrative without giving consideration to the current technological context has seemed paradoxical to investors' wanting to see how technology could be deployed to improve, rather than reduce, the provision of information.

The *Global Agenda Outlook 2013* highlights the new reality that technology imposes on business people and policymakers.<sup>48</sup>

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<sup>47</sup>Monga and Chasan, "The 109,894-Word Annual Report."

<sup>48</sup>World Economic Forum, *Global Agenda Outlook 2013* (2013): [www3.weforum.org/docs/WEF\\_GAC\\_GlobalAgendaOutlook\\_2013.pdf](http://www3.weforum.org/docs/WEF_GAC_GlobalAgendaOutlook_2013.pdf).

The boundaries of physical and digital worlds are melting at unprecedented speeds, leaving many of our policy-makers, heads of government and business people unprepared to integrate new concepts into decision-making processes. Technologies have evolved and continue to do so, while vast amounts of data are sent and received by billions of interconnected devices. As interdependency grows between individuals and the systems they are a part of, what are the issues and opportunities to be grasped? (p. 16)

Recognition by accounting standard setters and policymakers of the changes in technology (i.e., in connectivity and delivery of data) and the bearing such changes have on the perceived quality and relevance of their decisions is essential for the sustainability and relevance of financial reporting and accounting standard setting in the eyes of investors. Investors believe standard setters and policymakers need to integrate into their decisions the effect that changes in technology have, or could have, on capturing, managing, analyzing, presenting, and delivering financial data. In sum, because much of the information provided must be mandated by policymakers, they need to incorporate a view of technology into their work.

### ***SEC Commissioner Stein Calls for Consideration of Technology***

SEC Commissioner Stein, in several recent speeches in 2015, has provided some perspectives on technology and its importance to the disclosure debate. In her remarks, for example, before the Institute of Chartered Accountants in England and Wales in September 2015, she talks about structured data; the importance of them being provided in a timely, accessible, and transparent way; and the need for assurance on the data.<sup>49</sup>

As the SEC modernizes its disclosure system, it is important that each disclosure document be presented in a manner that can be effectively and efficiently used in today's modern capital markets, with an independent accountant providing assurances to investors and market participants about its accuracy and fair presentation. The importance of this structured data for accountants is clear, and the SEC needs to follow your lead and adopt measures, such as requiring the use of inline XBRL, for financial reporting and for other data-centric reports.

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<sup>49</sup>Kara M. Stein, "Accountants and Capital Markets in an Era of Digital Disruption: Remarks to the Institute of Chartered Accountants in England and Wales and BritishAmerican Business," SEC (9 September 2015): [www.sec.gov/news/speech/remarks-inst-chartered-acctnts.html](http://www.sec.gov/news/speech/remarks-inst-chartered-acctnts.html).

Stein also talks about the role that technology can play in disclosure and whether technology could enable a new way of communicating with investors and market participants in her remarks at the “SEC Speaks” conference.<sup>50</sup>

“Technology,” she said, “makes it possible to meet the needs of different types of investors at different points in time.” Therefore, the goal should be to leverage data to enhance disclosure and provide greater transparency. She talks about the SEC launching the EDGAR system in 1995 and the monumental change it brought about regarding how investors obtain information on companies. Paper documents were replaced with electronic documents that could be accessed over the internet—a good start. However, she noted that although technology has evolved in the past 20 years, EDGAR has not kept pace with technological advances:

Going forward, we should be thinking broadly about new and creative ways to make the information contained in the filings more accessible to investors. In short, modernizing this critical disclosure portal should be a top priority to provide benefits to both companies who file and investors who get their information from the filings.

We also should be moving to a world in which investors can request and direct the type and the quantity of data they receive: from basic details about a company to more detailed and robust information. Some investors may only want to know the basics, and that should be provided to them. But, more sophisticated investors may want more detailed, targeted information, and they should be able to “click” and drill down to get that detail. We should be thinking about how investors obtain and use information about companies and how to improve the user’s experience.

Making data available more quickly and in a format that is more usable could enable better decision making, empowering both investors and market participants. Indeed, with current technology, it is possible to layer disclosure so that those who want to get beyond the basics can do so quickly and easily. We have a precedent for doing that in the mutual fund summary prospectus, which itself should be reevaluated as part of the disclosure effectiveness project to evaluate how it is working for firms, investors, and other market participants.

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<sup>50</sup>Stein, remarks at the SEC Speaks conference (2015).

And, with the computing and data crunching power available today, additional layers could provide investors with direct access to raw corporate data—for example, loan quality and swaps exposures, for a large bank, or product sales and distribution information for a consumer products company. Further, greater transparency in pricing and transaction data would reduce costs and increase market efficiency.

In sum regulators should be thinking about how technology and data can serve every investor from the least to the most sophisticated by layering information. Furthermore, instead of focusing on pushing data and information to investors, they should consider how investors and others can access data dynamically or in real time.

## Some Changes in the Right Direction

### *From Disclosure Overload to Disclosure Effectiveness*

In 2012, the SEC changed the title of its disclosure initiative from “disclosure overload” to “disclosure effectiveness.” We surmise that the call from investors helped reshape the title of the initiative. More important, we hope that the direction of the project changes from a focus on volume to a focus on effectiveness.

### *SEC Proxy and Clawback Proposals*

The recent SEC efforts toward requiring the use of XBRL to structure data in proxy statements and disclosures of incentive compensation clawback provisions demonstrate an interest in providing more usable access to such information.

### *Accounting Standard Setters: Need to Consider Implications of Technology in Their Decision Making*

The SEC’s focus, however, is on the method of delivering information or data, not on the nature of the information or data to be delivered. The latter is the responsibility of standard setters. Therefore, we believe standard setters, such as the International Accounting Standards Board (IASB) and the FASB, need to incorporate advances in technology into their policymaking and standard-setting decision processes.

Standard setters should consider financial reporting and disclosure reforms in the context of matters that investors perceive to be affecting the financial reporting environment, such as emerging trends in technology. Such matters have the most direct link to improvements investors see as necessary to make financial reporting and disclosures more useful in investor decision making. That is, standard setters need to include technological advancements in their decision-making process when setting accounting and disclosure requirements. However, we see little technology incorporated into their thinking about what is possible for financial reporting and disclosure.

We also believe it is necessary for standard setters to become better informed regarding the deployment of technology within businesses because it will help them challenge the refrain that it is too costly to provide information when they create new disclosure requirements.

We have seen the IASB begin to ask questions—for example, in the IFRS Trustees Strategic Review—regarding what impact its stakeholders think technology will have on the standard-setting process. Investigating 2014 public company filings done in the XBRL format, FASB technicians found approximately a trillion dollars in undiscounted lease obligations reported in the notes. The FASB found the economic size of that number a compelling reason to add transparency and bring those numbers onto the balance sheet.<sup>51</sup> Although these moves are good, much more needs to be done to bring greater transparency and more timely information to investors.

Standard setters need to consider how the paradigm has shifted. Vasarhelyi puts it best:<sup>52</sup>

Traditional accounting methods relied heavily on manual capture and processing of information. Any reprocessing, new reporting structure, or reinterpretation was prohibitively expensive. This has dramatically changed, but standards have not, allowing heavy opacity in reporting data. Items such as the value of traded financial instruments, inventory, or property plant and equipment can be: specifically identified, valued in real time, and re-valued at different bases (e.g., replacement cost, exit value). The traditional format and content of financial measurements have only subsisted in their common form due to regulatory constraints. Internal corporate measurements are ERP based, much wider in scope (including a large number of non-financial measures), much more frequent (some accounts in real time) with thousands of pre-set reports, most of

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<sup>51</sup>David M. Katz, “New FASB Lease Standard Could Inflate Balance Sheets,” CFO.com (25 February 2016): [ww2.cfo.com/accounting-tax/2016/02/new-fasb-lease-standard-inflate-balance-sheets](http://ww2.cfo.com/accounting-tax/2016/02/new-fasb-lease-standard-inflate-balance-sheets).

<sup>52</sup>Miklos A. Vasarhelyi, “Financial Accounting Standards Should Not Matter: It’s Just a Layer,” *Journal of Information Systems*, vol. 26, no. 2 (Fall 2012): 1–11.



which are seldom used but readily available. The prized skill among accountants is not precision and persistence, but understanding of information availability and the ability to interpret this information for management. Once a report is created (and most come standard with ERP systems), the incremental cost of its production is close to zero. These reports are typically tabular in format and drawn directly from large transaction stores or intermediately through some form of OLAP (Online Analytic Processing) software. . . . OLAP creates multidimensional data cubes that pre-process expected data queries. Many versions of these cubes can be made available with a different level of information (updating) frequency for different recording, reporting, statutory, and decision purposes for the multiple stakeholders of business.

The social dynamics of information usage and provisioning have changed substantially. With ERPs, now the incremental cost of information provisioning is negligible, but the sort of overwhelming societal motivators (such as the great depression) that act to force a rebalancing of information provisioning are not currently present, making inertia prevail. Again, the information asymmetry between corporate management and stakeholders has assumed disproportionate levels, and the lack of comprehension of available technologies obscures this phenomenon.

As Vasarhelyi notes, consideration of the paradigm shift raises a number of questions:

- What are the characteristics of standards written for the information age?
- What is the proper structure and content of reports that measure temporal levels (e.g., the balance sheet) and flows (e.g., income statement) in this new paradigm?
- Are static reports needed at all?
- How timely must reports be?
- How do you report on continuing process performance, not directly on point-in-time results?
- How should information be layered?
- What data should be captured in each layer?

- How can real-time valuations and information get embedded in reporting for such items as inventory, PP&E, and financial instruments?
- What sorts of nonfinancial information should be provided?
- Can different stakeholders be satisfied with different reports? What does this imply?
- What are the economics of a new disclosure regime?

Without greater understanding of how technology is being deployed by businesses, how it can be harnessed to provide information that investors need, and how it affects the way requirements are written, standard setters risk reducing the relevance of what they do.

## Structured Data Have Led to More Effective Regulation

### SEC

The SEC's Division of Risk, Strategy, and Financial Innovation (RSFI) was formed, in part, to integrate data analytics into the core mission of the SEC.<sup>53</sup> The SEC is focused on developing cutting-edge ways to integrate data analysis into risk monitoring. In particular, the Accounting Quality Model (AQM) was designed to provide a set of quantitative analytics that could be used across the SEC to assess the degree to which registrants' financial statements appear anomalous.

The AQM is a data analytics program that culls XBRL data from financial reports to identify earnings management,<sup>54</sup> which allows the SEC to compare filings with those of industry competitors to identify anomalies. The AQM generates an automated risk score, which the SEC uses to conduct outlier analysis and identify companies for priority examinations.

Through this model, the SEC hopes to be able to more quickly identify earnings management—that is, manipulative or even fraudulent accounting practices. It looks at “risk indicators” (factors that are directly associated with earnings management), such as a high ratio of book to taxable income, off-balance-sheet transactions, changes in auditor,

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<sup>53</sup>The division has since been renamed and is now the Division of Economic and Risk Analysis.

<sup>54</sup>Craig M. Lewis, “Risk Modeling at the SEC: The Accounting Quality Model,” US SEC (13 December 2012): [www.sec.gov/News/Speech/Detail/Speech/1365171491988](http://www.sec.gov/News/Speech/Detail/Speech/1365171491988).

delayed financial statements, or multiple revisions over a short period of time. It also looks at “risk inducers” (factors that are associated with strong firm incentives to manage earnings), such as loss of market share or transient performance problems.

The SEC has also expanded the AQM to include an analysis of unstructured data—the MD&A, press releases, and other investor communications. Word choices used in the MD&A section can reveal warning signs of earnings manipulation. The SEC has found that companies engaged in accounting fraud tend to talk a lot about things that are essentially irrelevant—and not a lot about the real issues for companies in their particular industry. Such companies try to deflect attention from a core problem by talking a lot more about a benign issue than their competitors while underreporting important risks. These companies have become outliers in the way they talk about their financial statements and their performance.

Such assessments are useful in many areas of the SEC. For example, the Division of Corporation Finance (CorpFin) uses these analytics to inform its filings review process.

The results of the AQM’s analysis will also become the basis for enforcement scheduling and direction of resources.

Taken as a whole, the AQM appears to signal a move forward in SEC Chair Mary Jo White’s pledge to step up SEC accounting enforcement and aid investors by improving the quality of financial disclosures.

Of course, the effectiveness of SEC regulation depends in part on the quality of information it receives. The letter from the US House Committee on Oversight and Government Reform to SEC Chair Mary Jo White encourages the SEC to enforce the quality of interactive filings, issue comment letters when there are errors, fix the quality of XBRL-formatted financial disclosures, and incorporate this information into its review process.<sup>55</sup> It states:

Structured data in financial regulatory reporting has the potential to create profound, positive changes: better enforcement through analytics, more efficient and more accurate reviews, improved market efficiency, cheaper capital costs, and the open data investors are demanding. These revolutionary improvements will only occur as the SEC integrates structured data into its existing review processes, enforces the quality of the data submitted under the Interactive Data

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<sup>55</sup>US House Committee on Oversight and Government Reform (2013).

Rule, and articulates a vision for the transformation of its whole disclosure system from inaccessible documents into structured data.

We believe that at some point, the SEC should open its rule-making process to expand XBRL to the full financial filing. At that time, it can also capture the Form 8-K filings of press releases in a structured format. These changes will not only improve the SEC's ability to regulate but will also make the information more effective for investors. As long as data are available from other sources before the XBRL file—for example, from company releases and company websites—the value of the XBRL information will not be fully realized.

Furthermore, in a speech to the Institute of Chartered Accountants in England and Wales, SEC Commissioner Kara Stein reiterated SEC support for inline XBRL as a means to improve the quality of structured data for investors.<sup>56</sup> She cited the use of inline XBRL by UK companies reporting tax returns to Her Majesty's Revenue & Customs, noting that “this means that the document is presented with structured data embedded within it, so that it can be read easily by both humans and machines.”

## Others

### Japan

The Bank of Japan (BoJ) launched its XBRL reporting system for monthly balance sheet data from financial services companies in 2006. This initiative followed a three-year project, including several revisions of the taxonomy used for classifying the data and a series of test periods involving a gradually expanding number of banks.

The BoJ currently gathers data from some 560 banks and other financial services companies as part of its task of examining and monitoring Japan's financial services industry. The BoJ expects that its adoption of XBRL will encourage broader use of XBRL and improve the efficiency of data exchange in the financial data supply chain.

### United Kingdom

The UK Companies House began receiving statements in XBRL format in 2005.

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<sup>56</sup>Stein, “Accountants and Capital Markets in an Era of Digital Disruption” (2015).

## Canada

The Canadian Securities Administrators has established a program to allow issuers to voluntarily file their financial statements in XBRL format on its System for Electronic Document Analysis and Retrieval (SEDAR).

## Solvency II

The Solvency II Directive requires all concerned undertakings and supervisors in Europe to adapt their reporting processes. XBRL is the mandatory technical format to be used for reporting by national competent authorities to the European Insurance and Occupational Pensions Authority.

## OECD Base Erosion and Profit Shifting

In an increasingly interconnected world, national tax laws have not always kept pace with global corporations, fluid movement of capital, and the rise of the digital economy. The resulting gaps and mismatches can thus be exploited to generate double nontaxation, which undermines the fairness and integrity of tax systems.

Base erosion and profit shifting (BEPS) refers to tax-planning strategies that exploit these gaps and mismatches in tax rules to artificially shift profits to low or no-tax locations where there is little or no economic activity, resulting in little or no overall corporate tax being paid. BEPS is of major significance for developing countries because of their heavy reliance on corporate income tax, particularly from multinational enterprises.

The OECD has agreed on a new framework that will allow all interested countries and jurisdictions to work jointly for the implementation of the package of measures against BEPS. New reporting requirements for larger companies will make detailed country-by-country tax and financial information visible to many—possibly (in the future) not just to tax authorities. In addition, the volume of data disclosed will be much more than companies are currently reporting worldwide.

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## 7. Our Vision: Present and Future

In this paper, we have examined the role of all parties involved in the financial reporting process, highlighting how data and technology could be beneficial to each party as well as the challenges faced by each party. Overcoming the challenges is key in increasing the pace of change toward a more effective and efficient financial reporting process.

What we do now and where we go in the future to ensure users receive more transparent, better-quality information on a timely basis is not an idealized vision but one we believe is achievable in the following ways.

### Present

#### *Companies Need to Provide Entity-Specific Information*

One of the biggest challenges the industry is facing in the financial reporting process is that of data quality. Regulators in the banking sector in the United States—members of the Federal Financial Institutions Examination Council (FFIEC), the Federal Deposit Insurance Corporation, the Federal Reserve System, and the Office of the Comptroller of the Currency—recognized these challenges and found ways to overcome them. The FFIEC implemented XBRL in its quarterly bank call report process but did not permit the use of entity-specific extensions and required that banking institutions use software that provided automated error checking as well as quality assessment checks whereby call report data would be validated prior to submission. Therefore, these agencies received good-quality information.

Another process some agencies have adopted is form-based reporting, whereby companies enter the data on a form and submit it to the respective agency. It is then converted via automation into structured data.

Although this provides better-quality, comparable information, investors need information to also be entity specific in order for it to be meaningful to their financial analysis. Neither the prohibition on extensions nor the form-based approach allows companies the flexibility to provide information that is specific to them. We, therefore, believe that it is necessary to allow for the use of company-specific extensions as well as the development of “an extension anchor”—that is, a technical connection between extension elements to

official or base taxonomy concepts. And in our view, XBRL International should develop the technical connection.

Having to anchor each company-specific extension to the base taxonomy concept may result in an incremental cost to preparers but a reduction in cost to users because it would allow for automated analysis of company-specific extensions. Furthermore, an incremental cost may deter preparers from using extensions unnecessarily. Finally, the improvement in data quality would encourage users to use the data more than they currently do and thus put more pressure on companies to clean up their data.

XBRL International has formed an Entity Specific Disclosures Task Force. The task force recognizes that the use of extensions allows filers to accurately represent their disclosure in XBRL but can also make it harder to perform analysis and comparison on the resulting data. The goal of the task force, therefore, is to improve the handling of entity-specific disclosures, including defining when to use extensions and improving the comparability of extensions and the filings that use them.

The task force is currently in its discovery phase and is receiving updates from jurisdictions around the world on the different ways they have tackled these types of disclosures. The task force will hear about experiences in the United States, the United Kingdom, and Denmark to start, with a number of other countries, including Japan and Chile, to follow.

Following the discovery phase, the task force will define requirements for technical mechanisms for improving comparability and develop suggestions for best practices and potentially new specification modules to constrain the way that entity-specific disclosures are made. We laud its efforts.

## Future

### *Broader Use of Structured Data*

Structured reporting is most effective when it is broadly applied to all aspects of reporting—that is, to earnings releases and all regulatory filings, such as Form 8-K, proxy statements, tax reporting, and so forth.

Companies thus need to structure data early in the reporting process and start thinking of structured data as a form of communication, not merely as a form of delivery. Consistent

use of structured data for all reporting will help make the data consistent within the company over time and comparable between companies.

Research has been conducted to demonstrate the benefits of structured reporting for not just financial but also tax reporting. Chen, Hong, Kim, and Ryou summarize the findings of a study on the impact of structured reporting on aggressive tax positions:<sup>57</sup>

We examine whether the XBRL-induced reduction in the information processing costs to outside information users mitigates corporate tax aggressiveness. Reduction in the information processing costs is likely to facilitate external monitoring by outside stakeholders. With XBRL adoption, it becomes less costly for outside stakeholders to detect excessive tax avoidance, which in turn curbs managerial incentives to engage in tax-aggressive behaviors. We show that the extent of corporate tax avoidance decreases significantly after the adoption of XBRL for financial reporting. We also find that this pattern is more pronounced for firms with lower level of institutional ownership and analyst coverage.

To broaden the use of structured data, we believe taxonomies could be developed over time for other forms of reporting, such as integrated reporting.

Indeed, there have been discussions about introducing XBRL to cover corporate actions. “Corporate Actions 2009: Improving Issuer–Investor Communication by Reducing Risk and Cost through Technology Standards” puts it best:<sup>58</sup>

In 2008, there were over 5.8 million unique corporate action events on corporate and municipality securities, many requiring some form of shareholder activity. The vast volume of data exchanged today to settle trades has brought significant focus again on the processing of securities. The time has come for all players in the industry to address the imbalance between the amount of information that is being created and the ability of the industry to effectively analyze and manage that information. Today we have the opportunity to begin to address this imbalance through the introduction of a technology called XBRL that can help transform textual paper-driven information into tagged

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<sup>57</sup>Jeff Zeyun Chen, Hyun A. Hong, Jeong-Bon Kim, and Ji Woo Ryou, “Information Processing Costs and Corporate Tax Aggressiveness: Evidence from the SEC’s XBRL Mandate,” Working paper (24 March 2016).

<sup>58</sup>Securities Operations Forum and XBRL US, “Corporate Actions 2009: Improving Issuer–Investor Communication by Reducing Risk and Cost through Technology Standards,” Conference background supplement (2009).



electronic data. XBRL can offer a real opportunity to address a securities process that has alternatively been declared the “holy grail” or the “wild west” of the financial services industry—corporate actions.

The paper goes on to say,

A single corporate action has an enormous impact on numerous players in the securities processing and investment chain. Ultimately, it is critical to providing investors with the information they need to make decisions, where needed, and to ensure that shareholder portfolios are properly managed.

In addition, XBRL US has developed a taxonomy to cover corporate actions.<sup>59</sup>

Finally, structuring needs to apply not only to all forms of reporting but also to all companies. A recent European Securities and Markets Authority (ESMA) consultation paper questions whether XBRL reporting should apply to small and medium-sized enterprises (SMEs).<sup>60</sup> Not having SMEs filing in XBRL prevents automated analysis of these companies for investors who invest across companies big and small. The availability of financial information in a standardized format also benefits SMEs looking for greater investment in their companies.

Furthermore, it is already known that listed SMEs are capable of deploying XBRL effectively. In the United Kingdom, for instance, all companies—large and small—have been included in mandatory filing in iXBRL (Inline XBRL). SMEs should balance the cost of tagging against the cost of capital. XBRL filings make the financial information of SMEs more accessible to investors and lead to a reduction in the cost of capital.

## **Deeper Use of Structured Data**

Regulators need to not only require structured reporting of the financial statements but also to allow investors a deeper look into annual reports and other reports by applying structuring to the reports in their entirety. The aforementioned ESMA consultation paper suggested that only the face of the annual financial statements be structured. However, simply tagging the values on the face of the financial statements values is insufficient.

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<sup>59</sup>See <https://xbrl.us/xbrl-taxonomy/2012-corporate-actions>.

<sup>60</sup>ESMA, “Consultation Paper on the Regulatory Technical Standards on the European Single Electronic Format (ESEF),” European Securities and Markets Authority (25 September 2015): [www.esma.europa.eu/sites/default/files/library/2015/11/2015-1463\\_esma\\_consultation\\_paper\\_on\\_esef.pdf](http://www.esma.europa.eu/sites/default/files/library/2015/11/2015-1463_esma_consultation_paper_on_esef.pdf).

There should be a requirement to separately tag the values in the notes to the financial statements because this information is extremely valuable to investors.

Furthermore, text block tagging should be required for the management commentary, each note to the financial statements, and each significant accounting policy. The XBRL user can then perform text analysis using the text block-tagged information rather than having to resort to the PDF (portable document format), which would increase the usability of the unstructured data.

We believe that structured reporting should apply not only to all parts of the annual report but also to interim reports because investors make investment decisions throughout the year, not just at year-end. Not applying the technology to interim reports brings virtually no added benefits to investors. Investors need a repeatable process whereby they can compare the interim and annual information in the same format (i.e., structured data).

Structuring should also be extended to the audit report.

Indeed, taxonomies have already been developed for the audit report and management commentary:

- Enhanced Business Reporting Consortium MD&A taxonomy
- XBRL US auditor taxonomy<sup>61</sup>
- Deloitte Netherlands annual report in XBRL, including the auditor report

Structuring would bring greater transparency to users. For example, users would have a better understanding of non-GAAP measures because structuring that information requires the use of formulas. Broader and deeper use of structured data across all reports in their entirety would bring about untold efficiencies and transparency for all users.

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<sup>61</sup>See the section “US Financial Reporting–Accountants Report” (<https://xbrl.us/xbrl-taxonomy/vfp-financial-reporting>).



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