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OCTOBER 2010

FOR
XBRL INTERNATIONAL, INC.

XBRL OR CUSTOMIZED XML?

Choosing the right electronic business reporting technology to meet your needs – the first time

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OVERVIEW

A common decision facing organizations implementing information technology (IT) systems for business reporting is the selection of the appropriate technology standard to represent the information being reported. This discussion frequently focuses on whether to develop customized software using Extensible Markup Language (XML), or whether the project would benefit from the additional richness of information that can be expressed by using the freely available open standard Extensible Business Reporting Language (XBRL). XBRL is an application of XML using W3C¹ standards to provide not only a vocabulary for business reporting but also a means of unambiguously representing the semantics, or meaning, of the information being reported.

This paper is intended for decision makers involved in the planning or approval of projects that could potentially use XBRL. It is at a high-level such that a technical understanding of XBRL and XML are not necessary. The discussion is relevant across organization types, including large (or small) for profit enterprise, all levels of government, and prudential and securities regulators. Examples illustrate the decision process used by organizations charged with prudential oversight, government regulators, corporations, and novel implementations (sustainability) in their decision to ultimately choose an XBRL solution. The paper concludes with a discussion of some of the issues involved in making the decision between XBRL and customized XML.

LAYING THE GROUNDWORK

Before examining some real-world business reporting projects, let's begin by building a common understanding of standards in general and XBRL and customized XML in particular. The goal here is to focus on the business perspective, while providing you with a basic vocabulary for discussing the project with your implementation team. In addition, I touch on the concept of project requirements and the importance of understanding the needs of a project before selecting a technology.

WHAT IS A STANDARD?

Standards are encountered in many aspects of our professional lives, not just IT. For example, the International Organization for Standardization (ISO) has developed over 18,000 standards on a variety of subjects, including standards for industries, services, health care, IT, and quality management (ISO 9000).²

A standard describes an agreed upon way of doing things. It is:

- **documented** – anyone can make use of the document (specification) as a rule, guideline, or definition
- **repeatable** – the specification is detailed enough to lead to consistent quality in output
- **widely accepted** – a specification only becomes a standard when people agree to use it
- **created by all interested stakeholders** – pooling of resources and expertise make standards robust
- **voluntary** – though some laws may make the application of particular standards mandatory³

¹ W3C – World Wide Web Consortium – <http://www.w3.org>

² ISO website – <http://www.iso.org/iso/home.html>

Why are standards relevant? Standards provide consumers with a level of confidence in the products and services they purchase or use. From an IT perspective, implementing a standard ensures that the data and software applications you produce are interoperable with those produced by other organizations following the same standard. Standards also save time and money because you do not need to continually “reinvent the wheel.”

XML STANDARD

From a business reporting perspective, the XML standard enables your organization to structure, store, share, and present your data in a platform-independent way. For example, you can extract data from a database and encode it in XML. Now you can share XML-encoded data as-is with investors or a regulatory body, provided they have the tools and information necessary to interpret and present the data. Alternatively, you can send the data to a Web browser, where you can specify how it is presented and even enable authorized users to update data and model scenarios. Many commercial vendors and open source projects support the XML standard with tools and software.

From a technical perspective, the XML specification defines a set of rules for creating valid XML. It is not focused on business reporting, but rather it is a broad-based specification applicable to any project requiring the structuring and electronic exchange of data. To implement XML for business reporting, you can choose to adopt the XBRL standard—an XML-based specification designed specifically for business reporting—or you can design a custom implementation of XML that meets your business reporting needs, which is referred to in this paper as customized XML.

WHAT IS XBRL?

XBRL is a freely available, market-driven, open, global standard for exchanging business information using XML. The XBRL specification is developed and published by XBRL International, Inc. (XII), which is a non-profit consortium of more than 650 companies and agencies interested in the development, promotion, and adoption of XBRL.⁴ XBRL builds upon XML, allowing accountants and regulatory bodies to identify items that are unique to the business reporting environment in their countries and also taking into consideration the multidimensional nature of business reporting. The XBRL standard provides your development team with everything it needs to implement a reporting solution that is interoperable with systems currently in use by many international organizations and regulatory bodies.

From a technical perspective, XBRL implements XML, but also encapsulates other WC3 standards to enable features important to business reporting—like multiple relationships (both hierarchical and non-hierarchical) and extensibility—that are not available in native XML. The XBRL specification defines how to create documents containing your data in well-formed XML (called *instance documents*) and how to create files containing relevant business terminology, their meanings, their data types, relationships among terms, and the rules/formulas they must follow (called *taxonomies*).

³ BSI (National Standards Body of the UK) website – <http://www.bsigroup.com/en/Standards-and-Publications/About-standards/What-is-a-standard/>

⁴ XBRL website – <http://www.xbrl.org/AboutTheOrganisation/>

The taxonomies available through XII are created by groups of experts with extensive knowledge of regulatory requirements and reporting frameworks, both within individual countries and globally. These taxonomies are prescriptive but not restrictive; you can extend public taxonomies or create your own custom taxonomies to define business terminology unique to a given environment—without updating software applications that process XBRL. However, it is possible to specify in the rules surrounding a particular XBRL implementation that taxonomy extensions are not permitted (e.g., Federal Financial Institutions Examinations Council). Many vendors support XBRL with data validation tools and compatible software applications.

WHAT IS CUSTOMIZED XML?

Customized XML is a custom implementation of XML created to meet the business reporting needs of your organization. Your development team uses the XML specification and possibly other XML-based technologies as a basis for creating a business reporting solution. The solution is generally proprietary and unique to your organization.

A customized implementation has many advantages, not the least of which is simplicity. For example, some projects may not require multiple relationships, extensibility, and sharability with other organizations. With customized XML, you can make use of off-the-shelf XML tools and software to create and validate the XML, though you may still need to develop tools for validating your *data*.

PROJECT REQUIREMENTS

The previous sections exemplify why you need clearly-defined project requirements *before* you begin discussing technologies. A simple business reporting project has very different needs than a complex one. Similarly, if your data needs to be shared/exchanged with other companies, associations, or regulatory bodies, you need to find out how the data needs to be formatted and whether the target organization has expectations with respect to the appropriate technology. The [Choosing the Appropriate Technology for Your Project](#) section at the end of this paper provides guidance on analyzing your project's needs and choosing an implementation strategy.

REASONS TO AVOID BUILDING NEW XML LANGUAGES

If you want to discover some good reasons to avoid reinventing the wheel when it comes to XML, Tim Bray wrote an enlightening article entitled [Don't Invent New XML Languages](#).

While last updated in 2006, its message is still relevant today: Before investing in a new XML-based solution, make sure that you have examined all the existing XML-based languages to see if what you need already exists.

IMPLEMENTATION EXAMPLES

A common decision facing organizations implementing IT systems for business reporting is the selection of the appropriate technology to represent the information being reporting. In this section, four examples are used to illustrate projects wherein XBRL was chosen. These examples identify the project requirements, alternative technologies considered (if available for public dissemination), and the basis for decision.

PRUDENTIAL SUPERVISION – COREP/FINREP⁵

In 2004, the Committee of European Banking Supervisors (CEBS) was faced with the task of implementing a common electronic reporting format for the harmonized Basel II European tables. Common solvency ratio reporting (COREP) is for credit institutions and investment firms reporting. Financial Reporting (FINREP) is for credit institution's published financial statements and prudential reports produced with Internal Accounting Standards/International Financial Reporting Standards.

The CEBS identified the following project requirements:

- represent the entire set of Excel tables
- facilitate validation
- define presentation
- support multiple languages

XML, SDMX, and XBRL were considered. XML was eliminated because it did not provide a standardized format for financial data. While Statistical Data and Metadata Exchange (SDMX) could support the multidimensional data contained in the tables, it was eliminated because it did not support the full set of project requirements. Ultimately, XBRL was chosen because it allowed the CEBS the ability to define the semantic meaning of the data within a modular taxonomy so that it could be implemented at the level of detail required in different countries and facilitated data level validation.

STATE GOVERNMENT – STATE OF NEVADA⁶

In 2009, the State of Nevada's Controller's Office (SCO) was charged with collecting the debts of state agencies (SA) that were 60 days or more past due. Approximately 60 agencies provide accounts receivable information to the SCO 2 -3 times per month primarily in Excel format.

The State of Nevada identified the following project requirements:

- support accounts receivable data coming from multiple sources in a consistent format
- support additional SA data requirements while ensuring the data is in a standard format
- support data validation before and during the submission process
- avoid re-keying data
- enable programmed and ad-hoc reports

An XBRL solution—built using a taxonomy based on XII global standards—allows the reported data to be validated by the SA prior to submission to the SCO, thereby improving data quality. Further, unlike the previous system of Excel files which required time-consuming manual aggregation and was susceptible to re-keying errors, it is not necessary to re-key data after the XBRL tags have been applied. After the data has been tagged and validated, it may be used and re-used in both programmed and ad-hoc reports. In addition, this paves the way for XBRL to be a part of a larger integrated financial reporting portal within the state.

⁵ Eurofiling website – http://www.eurofiling.info/corepTaxonomy/corep_taxonomy_documentation.html

⁶ CFO website – http://www.cfo.com/article.cfm/14293057/2/c_14296446?f=home_todayinfinance
World Commerce Review website – http://www.worldcommercereview.com/publications/article_pdf/127

NONFINANCIAL REPORTING – SUSTAINABILITY REPORTING⁷

The Global Resource Initiative (GRI) is a non-governmental international joint initiative of the Coalition for Environmentally Responsible Economics (CERES) and the United Nations Environment Programme (UNEP). The GRI seeks to enhance the quality, rigor, and utility of sustainability reporting by creating a standardized approach for voluntary reporting. Sustainability reporting is a component of triple bottom line reporting.

The GRI identified the following project requirements:

- increase the reliability and consistency of sustainability information
- facilitate the exchange of sustainability data
- increase the value from the exchange of sustainability data
- facilitate regional reporting differences

The GRI recognized the benefit that technology had played in the exchange of financial data. Seeking to achieve similar gains from sustainability reporting, the GRI developed the first version of the G3 taxonomy in 2006. There are significant gains that can be made by including environmental and social performance information into the digital world in a consistently defined and easily searchable manner that can be accessed and shared across disparate systems. XBRL provides the means to define the semantics of sustainability reports to facilitate consistency. Further, there are significant connections between issues raised in sustainability reports and the economic value of the firm. For example, information regarding an organizations greenhouse gas emissions and occupational health and safety initiatives may be useful for predicting future costs. Hence, it is likely that gains can be made by incorporating sustainability reports into the larger realm of integrated reporting, which includes environmental, social, and financial reporting. In June 2010, the Johannesburg Stock Exchange mandated integrated reporting. XBRL facilitates the use of multiple taxonomies, such as a financial reporting taxonomy (e.g., US GAAP) and sustainability taxonomy (e.g., G3).

INTERNAL REPORTING – WACOAL⁸

Wacoal Inc., the Japanese women's apparel manufacturer, was faced with a common problem. Through a series of mergers and acquisitions they had grown into 36 subsidiaries with an assortment of 32 disparate legacy accounting systems that did not communicate across platforms and thus hindered the consolidation process.

Wacoal identified the following project requirements:

- ensure a flexible system that can be extended to meet future needs
- support real-time cash management
- improve decision support
- integrate the disparate systems

In an effort to increase efficiency Wacoal considered the alternatives: implement a consistent accounting information system across subsidiaries, develop an XML solution for connectivity, or implement an XBRL solution. Wacoal decided to implement an XBRL solution because it satisfied both current needs and could facilitate future growth and change.

⁷ Global Reporting Initiative website – <http://www.globalreporting.org/ReportingFramework/G3Guidelines/XBRL/>

⁸ Strategic Finance – <http://www.xbri.org/Business/Companies/Breathing-New-Life-into-Old-Systems.pdf>

Hitachi Systems and Services Ltd. built the XBRL Global Ledger (XBRL-GL) journalizing engine as the backbone for the new system. The journalizing engine allows data from the disparate systems to be tagged with XBRL taxonomy tags which then supports the data consolidation process. Because of the inherent flexibility of XBRL, future modules can be added that will fully integrate with the existing system. The implementation has been quite successful. It has increased real-time cash management by increasing the frequency of reporting and by reducing the burden to combine information across systems. In addition, the XBRL solution has reduced the end of cycle close by two days due to the automation of information integration.

CHOOSING THE APPROPRIATE TECHNOLOGY FOR YOUR PROJECT

The preceding examples show how the project requirements drove the selection of XBRL over customized XML. This is not always the case; there are projects that do not necessarily require the fullness of an XBRL solution.

To help you assess your own project requirements, we begin this section with a list of questions that should help you to frame your requirements in terms of the functionality that you need. Then, using the comparison table provided, you can look at how the technologies stack up against your requirements.

ANALYZING YOUR PROJECT REQUIREMENTS

Take a few minutes to review the following questions and select the ones that reflect your requirements. Beside each question is the functionality that you may need from your XML-based technology to satisfy your project requirements. After you have identified the functionality you need, you can find out the level of support that XBRL and customized XML offer by looking up the functionality in the table in the following section.

Table 1: Analyzing project requirements and identifying functionality

QUESTION	FUNCTIONALITY ^A
<input type="checkbox"/> Do you want to collect and analyze business information coming from disparate internal systems?	Data sharable internally Supports relational databases
<input type="checkbox"/> Do you exchange business information externally with other organizations or regulatory bodies?	Uses XML standard Supported by XML validation tools Data sharable externally
<input type="checkbox"/> Does some of your data require multiple relationships to be defined, such as information that belongs to multiple hierarchies or dimensions?	Expresses multiple relationships Uses other XML-based technologies Supports multidimensional databases
<input type="checkbox"/> Does your current system of reporting (such as Excel spreadsheets) contain formulas that you want to retain?	Supports simple and complex formulas
<input type="checkbox"/> Is data quality of high importance?	Supported by XML validation tools Supported by data validation tools
<input type="checkbox"/> Does the data need to be presented in multiple languages or currencies?	Multilingual/multiple currencies

☐ Would references to applicable laws or regulations clarify the meaning of the information being exchanged?	Data sharable externally Ability to document references
☐ Do you need high quality presentation of data?	Provides user-defined presentation
☐ Do you expect your data structure or content to change over time?	Flexibility (extensibility)

^A The functionality listed in this column corresponds to the Functionality column in Table 2.

COMPARING XBRL AND CUSTOMIZED XML: DIFFERENCES AND SIMILARITIES

The following table lists the functionality typically required by XML-based projects and then shows the differences and similarities in how XBRL and customized XML support that functionality.

Note: The following XML terms are used to describe some of the functionality: element, schema, DTD, and relationships. In XML, an *element* is a tag that describes the meaning of a piece of data, such as “current asset” or “liability”. *Schemas* and *DTDs* are files that contain lists of user-defined elements. You can create *relationships* between or among elements; for example, “current assets” is part of “assets”.

Table 2: Assessing how XBRL and customized XML implement functionality for business reporting

FUNCTIONALITY	XBRL STANDARD	CUSTOMIZED XML
Uses XML standard	Yes.	Yes.
Uses other XML-based technologies	Yes. XBRL uses: <ul style="list-style-type: none"> • XML Schema to define elements • Namespaces to specify which schema to look in to find a particular element • XLink to enable multiple relationships among elements • XPath and XQuery to support the functionality of some optional XBRL modules 	Maybe. The development team decides whether to use other XML-based technologies based on project needs.
Expresses multiple relationships	Yes. XBRL defines relationships separately from elements, so you can express more than one relationship among elements, such as multiple hierarchies.	No. If implemented as per the XML specification alone, the relationship is specified as part of the definition of an element.
Flexible (extensible)	Yes. You can define new elements and relationships without updating your XBRL-based software application.	Maybe. The software needs to be designed to handle unexpected elements.
Data sharable internally	Yes. You can define elements and relationships for data used internally.	Yes. You can define elements and relationships for data used internally.

FUNCTIONALITY	XBRL STANDARD	CUSTOMIZED XML
Data sharable externally	Yes. The XBRL community has defined, under a system of due process, standard elements and relationships (called taxonomies) that meet the requirements of regional reporting methods and enable organizations to share data.	No. Customized XML is generally proprietary and unique to the needs of an individual organization.
Ability to document references	Yes. XBRL has the ability to document authoritative sources for any concept built into it.	No. The XML specification alone provides no standard mechanism to reference external sources. A custom facility would need to be designed and implemented to provide this functionality.
Multilingual/multiple currencies	Yes. XBRL supports multiple languages and multiple currencies within the same instance document.	Maybe. The software would need to be designed specifically to provide this functionality.
Provides a user-defined presentation	Yes. The presentation linkbase allows user-defined presentation views.	No. However, the information provider could provide a separate file (i.e., an XSLT stylesheet).
Supports simple and complex formulas	Yes. XBRL supports simple addition/subtraction in the taxonomy. The Formula Specification provides the ability to define more complex formulas.	No. The XML specification alone provides only a single set of hierarchical relationships. A custom facility would need to be designed and implemented to express any mathematical relationships.
Supported by XML validation tools	Yes. XML validation tools can be used to ensure that the XBRL is well-formed (syntactically correct) and valid (according to the schemas).	Yes. XML validation tools can be used to ensure that the XML is well-formed (syntactically correct) and valid (according to schemas or DTDs).
Supported by data validation tools	Yes. Data files include information about that data, such as the time period to which the data belongs. Existing XBRL-based tools are available to validate mathematical relationships between data items that are defined in the taxonomy. Data validation tools cannot validate that the correct tag was chosen from the taxonomy.	Maybe. Data validation tools would need to be developed from scratch.
Supports interoperability with relational databases	Yes. The separation of elements and relationships plus XBRL's extensibility makes XBRL data easily interoperable with any relational database.	Yes. Requires more effort, however, because the elements and relationships are intertwined.
Supports multidimensional databases	Yes. Elements may be defined using a dimensional approach according to an open standard.	Yes. Elements may be defined using a dimensional approach. Requires additional effort to specify how the dimensionality should be expressed. Such expression would use a proprietary approach, which would not be generally accessible.

MAKING THE DECISION

After analyzing your project requirements and the functionality associated with those requirements, you should be able to come to a reasoned decision about the type of technology you feel would best suit your project. However, you should discuss the requirements and functionality with your implementation team. If they propose a different technology than the one you selected, ensure that any concerns you may have about the proposed technology are addressed before moving forward.

It should be noted that in some cases organizations do not follow this type of analysis. For example, the Federation of European Accountants (FEE) recently made the following comment about the use of XBRL:

If the full potential of the electronic network ... is to be realised in practice, we agree that the format of the information submitted should be harmonised. As mentioned in our response to the CESR Call for Evidence on standard reporting formats FEE is of the view that XBRL should be the way forward and does not see a need to analyse alternative electronic reporting methodologies at this stage. There seems to be broad support for the move towards XBRL in various jurisdictions in the European Union and around the world and thus FEE believes that the resources used in the move towards a common format should be used in the direction of developing XBRL and not for analysing alternative reporting means.⁹

This type of approach—to adhere to a standard created and implemented globally *because* it is a standard—returns us to the discussion of standards at the beginning of this paper. Using a standard provides stakeholders with confidence in the resulting system, interoperability, and a clear path forward for the future. Because a global standard exists for business reporting, the FEE felt comfortable recommending the adoption of the standard without requiring analysis of the alternatives.

CONCLUSION

As you consider the merits of a customized XML solution and an XBRL solution to your business reporting technology project, you should clearly define the project requirements to include details on the type of information to be exchanged, the conditions under which the information is produced, and how the information will be shared across the information supply chain. The project requirements rather than the existing technology skill-set within your organization should guide the decision. For more complex business reporting projects, customized XML may continue to be presented as an option. However, you should be aware that you may be committing to the redevelopment—in isolation—of a system parallel to the community-developed XBRL. Tens of thousands of hours have been spent by technical and subject matter experts in the development of the XBRL Specification and in the development of the US GAAP, IFRS, and XBRL GL taxonomies. By being cognizant of the key differences between customized XML and XBRL, you can make an informed decision.

⁹ FEE comment letter on the CESR Consultation Paper on “Development of Pan-European Access to Financial Information Disclosed by Listed Companies” page 3.

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