Improving XBRL Implementation & Interoperability

The Case for XBRL 2.1 Today

Notice to Readers

This XBRL International White Paper has been prepared by XBRL consortium members to assist IT professionals that need to advise or make decisions about the use of XBRL in accordance with XBRL Specification 2.1. However, this White Paper is not a substitute for professional advice and XBRL International makes no warranty as to any outcomes through the publication of this White Paper. When IT issues arise, professional assistance should be sought and retained.

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1. Overview

The release of XBRL specification 2.1 ushers in a new era of performance, interoperability and fit to business reporting needs. Regulators, infomediaries, corporations and other organisations now considering or already committed to leveraging the Extensible Business Reporting Language (XBRL) in software applications should be planning to use XBRL 2.1 [XBRL]. XBRL 2.1 is the newest version and will form the foundation for future optional XBRL modules and all major XBRL applications for years to come. In this short paper we explain the technical improvements made in XBRL 2.1 that substantially improve interoperability, the superiority of its supporting collateral, and its superior fit to needs of business reporting applications. XBRL 2.1 lifts the standard for defining, exchanging and disseminating business reporting information to a new level of clarity. All those following the development of this important technology should take advantage of the XBRL consortium's efforts to improve the standard.

Open specifications such as XBRL facilitate the ability of several different software packages to product documents that work in a number of situations. This interoperability permits organisations such as banks to receive XBRL documents from many different clients with consistent performance. XBRL specification 2.1 achieves this consistency by making numerous improvements that this paper will detail. Like all technical products that have to evolve and improve with time, XBRL 2.1 addresses these needs better than XBRL 2.0 did. Specification 2.1 Improvements include:

- **Interoperability:** XBRL 2.1 is accompanied by a conformance suite of 275 separate tests covering every aspect of the specification, so there is for the first time a "gold standard" that XBRL applications can use to verify their interpretation of XBRL [CONF]. Before XBRL 2.1 became a RECOMMENDATION this conformance suite was exercised by three separate software vendors to ensure specification interoperability.

- **Cost of implementation:** To ensure reduced cost of implementation a significant effort has been expended by XBRL International on the creation of XBRL 2.1 supporting materials. These include not only the conformance suite but also the Financial Reporting Taxonomies Architecture – a set of dozens of rules covering every aspect of taxonomy design, from modelling decisions to file modularity [FRTA]. Similar Taxonomy Architecture documents for applications beyond Financial Reporting are planned for 2004 and beyond.

- **Clarity:** The XBRL 2.1 specification, when compared to XBRL 2.0 specification, has been written in such as way as to be much more directive and instructive, with many more examples and detailed algorithms to aid software developers. This greatly reduces chance for error in software developer's products.

- **Future XBRL specifications:** Real-world experience with XBRL applications show that they benefit from complementary open specifications for representing validation formulas [FREQ], versions [VREQ], and other supporting information. These complementary standards, due this year, are being written exclusively for XBRL 2.1 These will be written for XBRL 2.1.

For these reasons, XBRL 2.1 is already being used for development of applications that will deploy in late 2004: at the UK Inland Revenue, at the Shenzen Stock Exchange, and the FFIEC. Simply put, the most cost-effective approach today is to design and deploy taxonomies and applications for XBRL 2.1. In the sections below each of these points is explained in more detail.

2. Who should read this document?

This document provides some technical insights into the improvements made to XBRL in the 2.1 version of the standard. It is primarily aimed at IT professionals that need to advise or make decisions about the use of XBRL.

3. Interoperability

Interoperability – allowing many different users to use applications from different vendors and applications of different types to send, receive, read and write data – is a fundamental purpose of XBRL or any other technical standard. Interoperability is achieved when software developers can write applications that share information with other software written by developers they have never communicated with and may not even know each other exist. One aspect of achieving this is to eliminate as many ambiguities as possible from an open specification, so that all software developers can agree, in effect, on what every part of the specification means. Specific improvements to the clarity of XBRL 2.1 as compared to XBRL 2.0 include:

- XML Schemas [SCHEMA] and restrictions on XML Schemas that enforce restrictions on what can appear in linkbases and tuples;
- Detailed definitions, suitable for rendering as algorithms for implementations, for when different items, contexts, links and other constructs are deemed equivalent;
- Less reliance on ambiguously defined features of XML Schema, replaced with explicit declarations such as `schemaRef`, `linkbaseRef`, and definitions for new roles and arc roles.

Features of XBRL 2.0 involving taxonomy extensions and using multiple linkbases of the same kind were implemented incompatibly by different vendors. Responding to these problems was the top priority for the consortium as it developed version 2.1 and is supporting materials.

This extra development and deployment time and cost is eliminated in XBRL 2.1 because so many of the basic and "borderline" or unusual cases of taxonomies and instance structures and content have been covered within the conformance suite, and the detailed specifications allow little room for ambiguity.

4. Cost of implementation

Specification 2.1 has reached "recommendation" status, the highest level of support from XBRL International consortium. Present and new vendors will be expected to embrace the new specification, which represents the best efforts of the world-wide financial community. Product support for XBRL 2.0 will fade while XBRL 2.1 support will grow. In a year or two there will be a limited choice of vendors still supporting the old technology whereas with XBRL 2.1 now a final recommendation, embracing it at this stage will reduce the probability of needing to spend more money in the future to "catch up" with what will then be the more generally accepted and supported standard.

To ensure interoperability, XBRL 2.1 is more restrictive than XBRL 2.0 in respect of how instances and linkbases can be structured. However, XBRL 2.1 provides taxonomy extension mechanisms that are designed to make additional information needed by applications accessible in a standard and predictable fashion. The greater regularity of the syntax – fewer choices about how an XBRL taxonomy or instance can look – is a boon to applications consuming XBRL because there are fewer cases that the software has to handle. Applications are simpler and less costly as a result. In short, the cost of implementing XBRL 2.1 will be lower.

Possibly the most important contribution to reducing the cost of implementation is that fact that not only is XBRL 2.1 syntax more restrictive, but the Financial Reporting Taxonomies Architecture 1.0 [FRTA] is inextricably tied to XBRL 2.1 and will never be "back ported" to XBRL 2.0. This is extremely important because it means that, henceforth, XBRL International acknowledged and approved taxonomies – which, by amortizing the cost of taxonomy development over many participants and many applications, are foundational to the efficiencies that XBRL has to offer – will virtually *all* be developed and published in XBRL 2.1.

Conversion of instances and taxonomies between XBRL 2.0 and XBRL 2.1 is one of the ways in which the transition to XBRL 2.1 can be accelerated, but by no means is a two-way conversion possible. Although XBRL 2.1 was designed to allow largely automated conversion of XBRL 2.0 instances and taxonomies, the reverse is not true, and in any event some manual intervention is needed (to assign a period type to every taxonomy item, and to select an appropriate arc role for each definition link). In addition, although it will be possible to "save as XBRL 2.0" any XBRL 2.1 taxonomy, XBRL instances that conform to those less rigorous XBRL 2.0 taxonomies will be less rigorous themselves and will not be as strongly validated by XBRL itself. Also, whether instances and taxonomies can be automatically converted or not depends to some extent on usage, and in any event, conversion is a short term fix since it imposes a performance penalty and adds to the code that must be maintained. Fundamentally, a decision to use XBRL 2.0 as anything other than a very short term development of pilots or roughing out a taxonomy design is a commitment to unnecessary costs.

5. Product support

Given that XBRL 2.1 achieved Recommendation status on 31 December 2003, most vendors have reworked their product feature sets and plans, so that you can be sure there will be XBRL 2.1 products that meet your current requirements within a year from now, well within the planning horizon of most IT projects. The same applies in respect of the availability of XBRL 2.1 taxonomies and other guidance that you can leverage. If your plans require XBRL-enabled products in the short term, then it is important to plan for the earliest possible transition from XBRL 2.0, and to evaluate this with respect to the functions your application requires:

Functional Area	Impact of XBRL 2.0 vs. XBRL 2.1
Programmatically creating instances	Approximately the same; syntax differs.
Exporting XBRL instances mapped from database	Approximately the same; syntax differs.
WYSIWYG authoring an instance	No commercially available XBRL 2.1 applications for this exist yet although some are expected soon. XBRL 2.0 instances can be converted to XBRL 2.1 automatically after the relevant taxonomies are converted.
Adding extensions to a taxonomy	Requires taxonomy development tool functionality; several XBRL 2.1 compliant taxonomy editors are soon to be released.
Importing instances of a known taxonomy	Easier under XBRL 2.1 because XBRL processors can perform more validation automatically.
Importing instances of unknown taxonomies	Easier under XBRL 2.1 and more robust because of the restrictions placed on XBRL 2.1 linkbase structures.

For example, if your application uses a fixed XBRL taxonomy and exports and imports instances within a closed system (functions 1 and 5 above), there is every reason to use XBRL 2.1 because the lack of third-party XBRL-enabled applications has no impact.

6. Future XBRL specification modules

XBRL 2.1 is a foundation specification upon which the consortium and third parties will publish taxonomies, and the consortium will develop additional modular specifications to provide needed functionality. The XBRL 2.1 specification itself, except for necessary errata, will remain stable for years. That is an explicit XBRL International consortium strategy. The need for additional XBRL 2.1 based specification modules has been illustrated in live applications.

- Versioning: When regulators or other data collectors publish updated taxonomies, it is important for users, developers and applications to be able to detect which portions have changed and in what way. In fact, with enough information and reasonably constrained changes (deletion, renaming, and type conversions of items), instances that conform to an older version of a taxonomy can be updated to conform to the new version.

- Formulas: XBRL applications that are deployed across multiple organisations have a strong need for flexible validation techniques; XML Schema's own "all or nothing" validation is unsuitable for applications such as the UK Inland Revenue electronic filing system in which some kinds of validation errors are clearly more consequential than others. More important is the ability to distribute identical validation criteria widely across many platforms and applications along with a taxonomy. There is a clear need for a standard in this area for many types of business reporting applications.

Both of these modular extensions to XBRL 2.1—and the enriched capabilities that they add to the consortium's taxonomies—are expected in 2004.

7. Next steps

The software product vendors and systems integrators that you deal with are already aware of the advantages of XBRL 2.1 – but they need to know that their customers are aware too. Ask them when they will support XBRL 2.1, and in the meantime, simplify your decision making by assuming your application will be in XBRL 2.1.

The case for XBRL 2.1 is one that is transparent to make, and over 200 members of the XBRL International consortium support it. One of the most important advantages of adhering to a standard like XBRL is that comparisons are straightforward; product capabilities and the differences between old and new are widely documented. And, as an open standard, the discussions that matter are public: there are no esoteric and incomparable pros or cons, no proprietary secret interfaces, no hidden costs, no planned obsolescence or any commercial strategy to replace this platform with another. In fact, at this time the XBRL International Steering Committee has indicated they have no plan to issue any new point releases to XBRL for two years, so there will not be even an XBRL 2.2 version before 31 December 2005.

XBRL International is recommending XBRL 2.1 in order to make XBRL more comparable, to leave it less subject to interpretation, to permit software vendors to use XBRL with a greater degree of confidence, remove barriers to adoption, to lower costs and to improve performance.

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