

**If Validation
Is the Answer,
What Are the
Questions?**

INTRODUCTION

“Validation” is a tricky word, especially when it comes to the creation and consumption of eXtensible Business Reporting Language (XBRL) documents. Though commonly used in the XBRL world, “validation” lacks a common meaning. Everyone seems to have a different definition and each seems to be correct in the usage. Why? Because XBRL can be validated at multiple levels, each providing unique benefits to Financial Regulators. This paper’s objective is to provide Financial Regulators with a better understanding of validation, from both a business and a technical perspective, and to provide associated descriptions and benefits of each level of validation.

AN OVERVIEW OF VALIDATION

The dictionary defines validate as “to give official sanction, confirmation, or approval to” or “to establish the soundness of; corroborate.” For the purposes of this paper, we will use the second definition – “to establish the soundness of.” Since XBRL is a business reporting standard based on the XML programming language, we can initially view validation as having three broad levels. From a business perspective, each level of validation delivers business benefits to the Financial Regulator. From a technical perspective, XBRL provides the technical underpinnings to support these benefits.

	BUSINESS PERSPECTIVE	TECHNICAL PERSPECTIVE
1	Is the filing formatted properly?	Is the filing valid XML?
2	Is the correct information provided in the filing?	Is the filing valid XBRL?
3	What is the quality of the information provided in the filing?	Is the data consistent with XBRL calculation linkbase and XBRL formula linkbase?

Validation also improves the efficiency of the reporting process by reducing the error rate and improving the accuracy of the submitted filings.

IS THE FILING VALID XML?

At the most basic level, the first validation test is whether or not the filing is formatted correctly. Or, from a technical perspective, is it syntactically correct XML? For example, syntactically correct XML requires the angle brackets to be properly balanced. The next level tests whether or not the XML tags are correctly formed and exist in the dictionary of available tags. XML validation requires that the filing references the proper schema which defines the tags in the same way a dictionary defines “nouns” and “verbs.” In the case of XBRL, the US GAAP Taxonomy defines the tags used in XBRL filings. Finally, XML validation requires the tags be used in grammatically proper fashion (technically known as grammar validation). A valid XML document is the baseline requirement for an XBRL processing engine to process the filing and provide the validations described in the next two sections. From a business perspective, this level of validation improves the efficiency of reporting by reducing the error rate and improving the accuracy of the submitted filings.

IS THE FILING VALID XBRL?

If the filing is XML valid, the next question is whether or not the filing is XBRL valid as defined by the XBRL 2.1 Specification. The specification clearly prescribes what is required for both a taxonomy and an instance document to be considered valid.

- **VALID TAXONOMY** – In the typical case, the Financial Regulator provides the base taxonomy for use by the filer and the taxonomy can be assumed valid.
- **VALID TAXONOMY EXTENSION** – The Financial Regulator may allow companies to extend the taxonomy. In the United States, for example, the SEC will allow companies to extend the base US GAAP taxonomy to meet the requirement



to file “no more or no less” information than currently provided. These extensions (creation of new labels, concepts and dimensions) must adhere to the XBRL 2.1 Specification. It is important to note that a valid taxonomy extension (from an XBRL perspective) may not adhere to the specific guidelines provided by the Financial Regulator. Consider the example in which a label extension misrepresents the underlying concept (e.g. “Net Worldwide Profit” as a label extension for the US GAAP concept “GrossProfit”).

- **CONFORM TO THE XBRL 2.1 SPECIFICATION** – In addition to any taxonomy extensions conforming to the XBRL 2.1 Specification, the instance document must also conform to the specification, such as, all concepts must have an associated context and/or the start date of a context must be earlier than the end date.

This level of validation also improves the efficiency of the reporting process by reducing the error rate and improving the accuracy of the submitted filings. Any 2.1 compliant XBRL processing engine should support this level of validation.

WHAT IS THE QUALITY OF THE INFORMATION PROVIDED IN THE FILING?

Having passed the first two levels of validation, the next step is to attempt to validate or measure the quality of the filing which can be measured along a number of axes. Specific measures of quality that the filing may be tested against include:

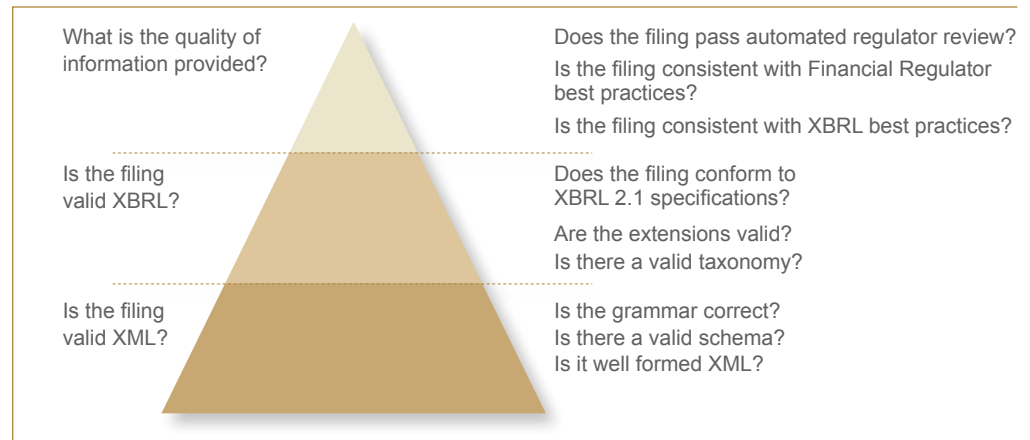
- **XBRL BEST PRACTICES** – The XBRL community has defined two standards that encapsulate the lessons learned based on broad and lengthy experience gained in XBRL implementation around the world. These standards are FRTA (Financial Reporting Taxonomy Architecture) and FRIS (Financial Reporting Instance Standards). While the current US GAAP taxonomy is not FRTA compliant, it is possible to apply the FRIS standard to filings. For example, having a fact value defined twice in an instance document is valid XBRL, but is not FRIS valid. The capability for this level of validation may be supported by an XBRL processing engine.
- **CONSISTENT WITH THE CALCULATION LINKBASE** – One of the key benefits of XBRL is the ability to define relationships between the concepts in a filing. In the case of the US GAAP taxonomy, the calculation linkbase is used to define the math implicit in financial statements (e.g., in the Balance Sheet, $Assets - Liabilities = Shareholder Equity$). A filing can be XBRL 2.1 valid, but may be considered inconsistent if numbers do not add up. From the Financial Regulator perspective, the calculation linkbase provides valuable information regarding potential errors in the filing, such as whether or not financial statements properly foot and schedules properly roll up. The financial regulator may choose to accept filings with inconsistent calculation linkbase validation results. In one example, the FDIC allows such inconsistencies, but requires an explanation for each one.
- **FINANCIAL REGULATOR BEST PRACTICES** – The Financial Regulator has the opportunity to define best practices for required filings. Examples might include limiting the number of periods allowed in a single instance document, restricting the use of tuples or requiring a specific naming convention.
- **AUTOMATED REGULATORY REVIEW** – One of the key capabilities of XBRL is the use of formulas to express business rules applied to a filing. These rules can be used to highlight errors or situations that might require additional scrutiny. Such rules could include checks for errors such as “Does the ending balance of last period for a concept match the beginning balance of the current period?” Business rules can be used to focus on topics that might need review, such as “Has the calculation linkbase been extended?” Business rules can also be used to flag situations of concern, such as “Is Pension Liability greater than 50% of Total Assets?” Note that the FDIC has been in production with an automated review process since 2005. Also, note that in the case of the FDIC, business analysts author the rules for automated review. The capability for this level of validation may be supported by an XBRL processing engine that supports formulas.

- **SCORECARD ANALYSIS** – As the Financial Regulator accumulates a significant number of filings, it will be able to mine these filings to understand the norms. The analysis of these norms may apply to both the data in the filing and the taxonomy extensions (or metadata). From a data perspective, key ratios can be benchmarked. From a taxonomy extension perspective, the Financial Regulator could analyze filings to understand the norms for the number of label extensions, which labels are extended and the number and location of concept extensions. The information gathered can be used in a number of ways: (1) to score a specific filing against the norms; (2) to define new business rules for automated regulatory review; and (3) to provide feedback to entities responsible for maintaining the US GAAP taxonomy.

All five levels of validation provide a wide range of benefits in addition to reducing errors and improving accuracy. For example, they allow the Financial Regulator to take an exception based approach to the review of filings, such as through automated regulatory review and scorecard analysis, thereby saving significant time and money.

Any 2.1 compliant XBRL processing engine should support the five levels of validation listed above with field proven performances on large scale.

VALIDATION HIERARCHY



SUMMARY

In the context of the Financial Regulator's usage of XBRL, validation is not a single point item. It is a continuum of activities from basic syntactic verification at the XML level to semantic analysis of the filing document. Each level of validation provides additional business benefits—from reducing errors and improving efficiency to enabling new ways for the Financial Regulator to execute its mission.

The UBmatrix XBRL Processing Engine provides the Financial Regulator the ability to deliver all of these levels of validation. Proven in production with regulators across the world, the UBmatrix XBRL Processing Engine provides full support for the follow features:

- FULL COMPLIANCE WITH XBRL 2.1 SPECIFICATION AND ERRATA
- FULL SUPPORT FOR THE DIMENSION 1.0 STANDARD (US GAAP AND NEW IFRS)
- FULL SUPPORT FOR FORMULAS (FORMULAS 2008 SHIPPING SUMMER 2008)
- FULL SUPPORT BEST PRACTICES (FRTA 1.0 FRIS 1.0)
- EXTENSIBLE VALIDATION ENGINE SUPPORT FOR FINANCIAL REGULATOR SPECIFIC BEST PRACTICES.

For more information visit www.ubmatrix.com

GLOSSARY

XBRL: eXtensible Business Reporting Language (XBRL) is a language for the electronic communication of business and financial data. It provides major benefits in the preparation, analysis and communication of business information.

XML: Extensible Markup Language (XML) is a programming language that facilitates the sharing of structured data and documents via the Internet.

XBRL 2.1 SPECIFICATION: XBRL 2.1 enhances the ability for business reporting applications to create XBRL data that will be usable by many other systems.

INSTANCE DOCUMENT: An instance document is an XML document containing XBRL elements. The financial statements of a company or any part thereof, expressed in XBRL, would be an instance document as would an HTML file that had various XBRL items embedded in it.

TAXONOMY: Taxonomy is the classification of organisms in an ordered system that indicates natural relationships.

CALCULATION LINKBASE: A calculation linkbase is used to validate calculations included in instance documents. For example, the sum of lower-level elements must be equal to the higher-level element.

TUPLES: A tuple is a fixed-size collection of elements. Pairs, triples, quadruples etc. are tuples. In a programming language, a tuple is a data object containing other objects as elements. These element objects may be of different types. Tuples are convenient in many circumstances. For instance, tuples make it easy to define functions that return more than one value.

GAAP: Generally Accepted Accounting Principles (GAAP) is the standard framework of guidelines for [financial accounting](#). It includes the standards, conventions, and rules accountants follow in recording and summarizing transactions, and in the preparation of [financial statements](#).

FDIC: The Federal Deposit Insurance Corporation (FDIC) preserves and promotes public confidence in the U.S. financial system by insuring deposits in banks and thrift institutions for at least \$100,000; by identifying, monitoring and addressing risks to the deposit insurance funds; and by limiting the effect on the economy and the financial system when a bank or thrift institution fails.

FRTA: The US Financial Reporting Taxonomy Framework (FRTA) is a collection of XBRL taxonomies that are used to express the financial statement-based reports of both public and private companies across all industry sectors.

FRIS: Financial Reporting Instance Standards (FRS) are rules that facilitate the analysis and comparison of XBRL financial reporting data by computer applications and human readers. The rules are intended to complement those in the Financial Reporting Taxonomy Architecture.

**IF VALIDATION IS THE ANSWER,
WHAT ARE THE QUESTIONS?**

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