INTERNATIONAL STANDARD XBRL

Florescu Vasile
Academy of Economic Studies Faculty of Accounting and Management Information Systems Bucharest, Romana str., No. 5, Sector 1 vasile.florescu@gmail.com Tel. No. 021.319.19.00/382
Amza Cosmin Petronel
University "Nicolae Titulescu" Faculty of Economic Sciences Bucharest, ***Calea Văcăreşti, No. 185, Sector 4*** *cosmin.amza@gmail.com Tel. No. 021.330.90.32*
Tudor Cătălin Georgel
Academy of Economic Studies Faculty of Accounting and Management Information Systems Bucharest, Romana str., No. 5, Sector 1 catalin.tudor@ase.ro Tel. No. 021.319.19.00/382

The development of a common syntax for EDI (Electronic Data Interchange), XML (eXtensible Markup Language), opened new formalization perspectives for interorganizational data exchanges over the Internet. Many of the organizations involved in the normalization of EDI are now concerned with the reporting of financial data over the Internet proposing an open and free standard called XBRL (eXtensible Business Reporting Language), based on XML and focused on the financial reporting in accordance to IAS/IFRS norms and Basel II directions. The use of a unique reporting format over the Internet namely XBRL, allows the optimization for financial communication and superior data exploitation within financial reports, consolidation, analysis, control and regulation processes. The present paper enrolls on the research line regarding the adoption of XBRL in the financial reporting processes (both internally and externally) within the european and international convergence context, and proposes an architectural framework for a XBRL platform at the national level.

Keywords: *EDI, IAS/IFRS norms, financial reporting, XBRL, taxonomies specifications, document instance, strategic alignment, XBRL platform.*

JEL Code: M15

Introduction

The evolution of information technology and communication (IT&C) has created opportunities for optimization of interorganizational information flows using e-business processes and generating activities in the regulation area for EDI standardization. Web and EDI synergy allowed to the SME's users to choose for the EDI using the universality of Web and to develop interorganizational information systems within an extended enterprise context (Amza 2006; Florescu & Tamaş 2006). Accounting normalization was the base for elaborating XBRL (*eXtensible Business Reporting Language*) as an open and free standard for financial reporting over the Internet. The XBRL is based on a common conceptual foundation being in accordance to the IAS (International Accounting Standards) and IFRS (International Financial Reporting Standards) simplifying communication, analysis and financial information exchanges (internal and external reporting) and recently banking supervision regulations. The adoption of XBRL as generalized standard for financial reporting answers to the transparence, fluency, reactivity and convergence exigencies at an international level. A global XBRL standard would impose an important rethinking of information systems on the organizational and interorganizational dimensions.
Our paper (1) introduces fundamentals of XBRL, (2) systematizes the advantages of XBRL adoption for different user's types and (3) analyzes the issues and evolutions of XBRL projects.

1. XBRL Fundamentals

1.1. What is XBRL?

XBRL is an international open international standard based on XML (**E**xtensible **M**arkup **L**anguage) and used especially for reporting financial data and defining financial reports in order to transmit them over the Internet. The XBRL allows organizations to structure and encode their financial information by the use of XML labels. According to the XBRL standard, financial reports (internal or external) are made in accordance of the IAS/IFRS regulations (see the image below) and are presented into a structured manner into an uniform electronic data format namely XBRL and is transmitted over the Internet toward interested organizations (Figure 1).

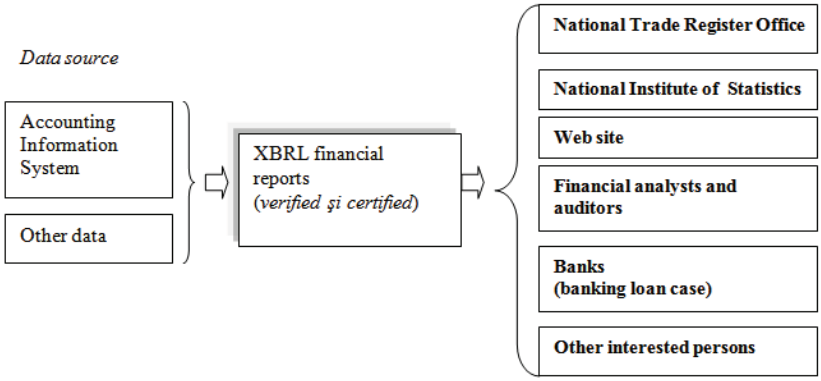

Figure 1. XBRL pilot format

Source: adapted from Hamon (2007)

The mechanisms for exchange, integrity, confidentiality and non-repudiation can be assured through techniques defined and accepted for XML. XBRL allows taking into account of the new regulations and norms of Basel II. Any organization, especially those that are listed, could use XBRL in order to reduce costs and improve the efficiency of financial and business information processing conditioned by the existence of an information communication infrastructure that implements XBRL standard (Richards, 2002). Because it is open, XBRL could adapt to any context of use. The development of XBRL contributes to the emergence of a new web services generation specialized in processing financial data.

1.2. What are the concepts used by the XBRL?

The XBRL standard allows organizations to structure and qualify information by using tags. It uses a specific set of concepts the most important of them being: document, taxonomies, XML schema, linkbases, and discovery taxonomy set (DTS), instance document and XBRL document.

The taxonomy document defines the elements that are to be reported according to the IAS/IFRS norms. The term of element defines any basically piece of information that must be included in a report. The taxonomy includes the definitions of elements and the relationships between those elements. Besides elements, a taxonomy document could include tuples. A tuple represents a special type of element that includes other elements. For example if we want to store an address this would be stored in the taxonomy document as follows:

```
<element name="Adresa" substitutionGroup="xbrli:tuple" type="xbrli:tupleType">
<element name="Strada" substitutionGroup="xbrli:item" type="xbrli:stringItemType">
<element name="Nr" substitutionGroup="xbrli:item" type="xbrli:integerItemType">
<element name="Localitate" substitutionGroup="xbrli:item" type="xbrli:stringItemType">
<element name="Judet" substitutionGroup="xbrli:item" type="xbrli:stringItemType">
```

The taxonomy document does not contain any value of those elements (the values of the elements specified by the taxonomies are contained in the instance document and are called facts). The taxonomy document allows the classification of the elements usually specifying hierarchies established among those concepts. In the case of XBRL, taxonomy consists of an XML schema and linkbases contained or directly referred by that schema. From a technical perspective, an XBRL schema is actually an XML schema modified in order to serve to the specific requirements of reporting for a certain area of activity. The role of taxonomies is to provide information to the applications regarding the way that financial and accounting terms should be interpreted. An XBRL taxonomy document uses the namespaces technique in order to identify different XML technologies that should be used in the final report. Among the XML namespace tags used we could enumerate:

- Schema XML - namespace tag used in all XML schema documents specifying the syntax in which the standard is expressed. The xs or xsd sequences are mostly used as prefixes in those documents;

- XBRL (*xmlns:xbrli*) – namespace tag that specifies the instance of an XBRL schema that defines a vocabulary that would be used in taxonomies;

- XLink (*xmlns:xlink*) – namespace tag that offers a complex framework for specifying references in an XML document;

- XBRL linkbase (*xmlns:link*) – namespace tag that specifies the linkbase as an document that contains links among the concepts of an taxonomy and inter-taxonomies, as well as external references. This namespace is a subset of the XLink specification that allows XBRL documents to be built from a taxonomies collection, specialized as **Presentation linkbase, Calculation linkbase, Definitions linkbase, References linkbase, Footnotes linkbase)**.

The links between the elements of a schema, known also as linkbases, are the elements of a taxonomy that offers information regarding the existing relationships among concepts of an taxonomy putting them into correspondence with external resources. Mainly, linkbases have the following goals:

- Elements labeling in order to make those elements intelligible for humans;
- Making references toward detailed resources related to a certain concept;
- Defining relationships among elements according to certain criteria.

The extension of taxonomy must be realized in the case that the local regulations of a specific geographical area do not have a correspondent within public taxonomies as IAS or IFRS for example. One of the main characteristics of XBRL is extensibility. The addition of a new element can be only done through the mean of a new taxonomy.

Discoverable Taxonomy Set (DTS) is a grouping way of the taxonomies of an XBRL document in a structure also known as set in order to be possibly used for data presentation in a report. The DTS is directly involved in the possible extension of taxonomies representing an instrument to be used by any XBRL documents processor for accessing taxonomies.

An **instance document** is an XML document that contains the values of an organization for the elements defined in the taxonomy that is referred. It is actually an electronically report created accordingly to the XBRL rules. Instance documents contain only data that will be included in the report. The data from these documents are arranged in a predefined order, their retrieval and arrangement in the final document being made exclusively by interpreting the content of the instance document from the perspective of the attached taxonomies. An instance document could contain elements or tuples. An element is the correspondent for a single concept while a tuple could represent a bi-dimensional table with a predefined number of columns and rows within taxonomy. The instance document defines a lot of the parameters that describes characteristics of the document as period of time for which are the data reported, the organization that emits the report, currency and so on. An XBRL document is obtained by combined processing of data and information contained in the taxonomy and instance documents.

What are the information technology solutions for migrating to XBRL?

The use of XBRL involves mainly a rigorously taxonomy to be defined and secondly an information system that allows the communication of financial data in XBRL format. The producer of the financial reports should ensure:

- In order to organize and store XBRL documents, it is necessary to have a solution that should be able to convert financial data from the information system into the XBRL format and eventually into an internal reporting form (this is the case of multinational companies that have branches and subsidiaries geographically dispersed) ;
- External communication of financial reports in XBRL format over the Internet in a secured manner.

The receiver of the financial reports should have an XBRL platform that should mainly ensure next functionalities:

- Taxonomies reading;
- Management of XBRL reports repository;
- Conversion of reports received in XBRL format in different data formats;
- On-line feeding of reports elaborated XBRL format;
- Manual operation from the financial reports received in the classical form of papers;
- Comparisons among the different published data;
- Technical and financial validation of XBRL reports.

In the figure 2, we propose an architectural framework for an XBRL platform at the national level.

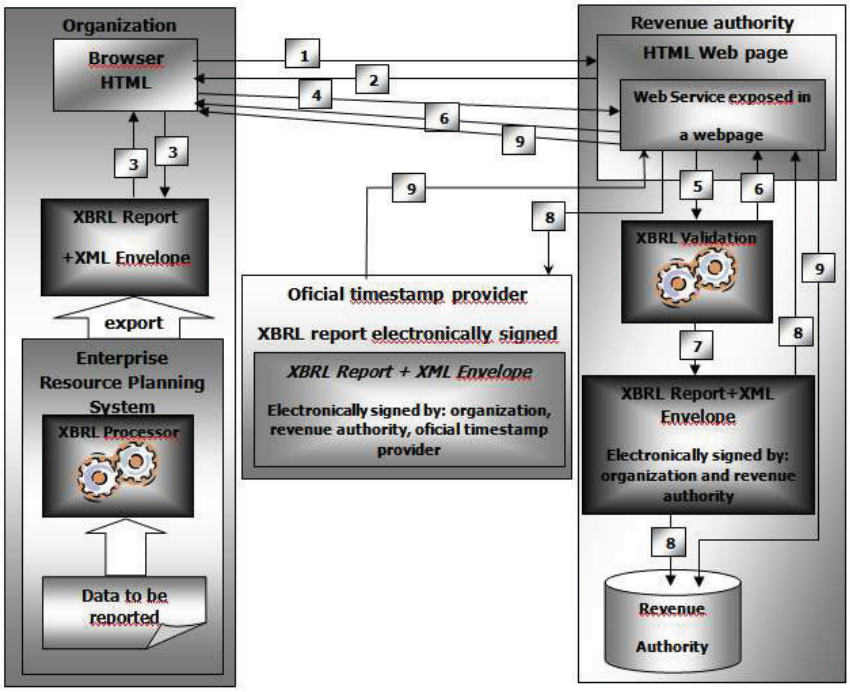

Figure 2. Proposed architecture for XBRL implementation

The sequence for semi-automated transmission of a financial statement in XBRL format (automation involves the use of web services both sides). The numbers of the actions figured in the above mention are explained as follows: (**1**) The assignee person of the organization connects to the webpage exposed, in order to collect XBRL reports by the revenue authority; (**2**) The web server of the revenue authority answers to the client request; (**3**) The assignee person of the organization specifies by using the browser the exported report in XBRL format; (**4**) The browser of the assignee of the organization uploads the XBRL formatted report onto the web page of the revenue authority. If there are sensitive data to be transmitted over the Internet could be used encryption with the public key of the financial authority; (**5**) The web service validates the received document (in the case that this is encrypted it is firstly decrypted); (**6**) The report does not respect the XBRL specifications and an error answer is sent back to the assignee of the organization; (**7**) The report respects XBRL specifications and is electronically signed by the revenue authority in the form that it was received;(**8**) and (**9**) A synopsis of the signed report by both organization and revenue authority is sent for time stamping by the official timestamp provider (both ends should have web services so the entire process could be automated). The report electronically signed both by the organization and revenue authority is stored in the revenue authority database.
The official timestamp provider issues a digital receipt that includes, besides the XBRL report synopsis, the moment when it was received. All those data are signed with the electronic signature of the timestamp provider. The receipt is stored together with the report that was saved in the step 8. A copy of the digital receipt will be sent to the assignee person of the organization as a proof of the accepting and transmitting of the financial statement. The digital receipt will be opposable to the third parties.

2. The advantages of XBRL

The adoption of a common financial reporting taxonomy based on the accounting standards and XBRL format offers many advantages both for the "producer" companies of the financial reports as for the "consumers" of those reports. The XBRL labeling offers the opportunity for rapid assembly of the information without needing to manually reenter the data. At the same time, it is easy to verify and certify those reports by the information systems. The "consumer" organizations of these reports in XBRL format get a greatly improvement of the receiving, comparison, analysis and decision processes regarding the financial state of health of the producer. Within the XBRL reporting context, the reported data become "intelligent" allowing rapid identification and exploration by the specific needs under different processing models. XBRL improves the analysis process of the reports and facilitates consolidation of data gathered from different data sources. The advantages offered by the XBRL are systematized by the different user types according to Johnson (2006): enterprises that produce financial reports, regulators organizations, stock exchange market, analysts, banking, financial information, auditors, experts and accountants. From the Teller (2008) point of view, the improvements brought by XBRL could be analyzed by the measure that this offers answers to the financial reporting: getting and publishing information, sharing comparing financial information, verifying financial information, analysis of financial information. It's obvious that the emergence of XBRL constitutes an important factor for making researches that should address on one hand abstraction the accounting concepts and on the other hand abstraction of the accounting norms that should equally take into account syntax elements (base concepts, actions that could be performed over the base concepts) and semantic elements (concepts and concepts dependencies) that gives sense to the syntax elements. Semantic abstraction could form the base for building semantic search engines of de financial information stored in financial reports Data Warehouses.
As a response to the necessity of alignment to the international or regional general accepted accounting standards, and to assure the compliance with the adopted practices in enterprises, XBRL standard is periodically supplemented with new taxonomies that can be regarded as language extensions for better responding to particular situations. Among the most popular, and, therefore, the most common taxonomies, four of them are distinctive: XBRL – GL (General Ledger), used, especially, for internal or group financial reporting information modeling; XBRL - IFRS, for preparing, structuring, and presenting the financial information together with its context, in compliance with the most common IFRS standards; XBRL - COREP, in respect to the Basel II reporting norms for financial reporting; XBRL – GAAP, addressing financial statements reporting, complying with USA GAAP rules. While all aforementioned taxonomies are important, XBRL – GL benefits, lately, from increased attention both in the research area, and practitioners and financial accounting information systems developer's circles. The latter perceive the opportunity of integrating the XBRL standard into their systems, as a formal support for the financial-accounting information transfer, not only for external destinations, but also at intra-organizational level. XBRL – GL standardizes the presentation of internal financial statements based on the periodic accounting journals, in order to improve information communication and transparency between different reporting entities. The GL extension provides the ability of accounting consolidation that can be detailed to the lowest level, because of the XML format hierarchical structure, thus, permitting, equally, the preservation of information context before consolidation. The proliferation of integrated financial-accounting information systems based on an open, service-oriented architecture (Tudor, 2006), may constitute, in our opinion, an important premise for the adoption of XBRL technology, which

can better answer to the conditions of such architecture. Thanks to the open standard, generally accepted language, platform-independent or report-independent characteristics, XBRL may constitute a distinctive business service for any accounting information system. The integration of such a standard in the financial-accounting information system architecture, acting in collaboration with bugetting, forecasting, reporting or analytical analysis, may open, from our point of view, new valences in the field of the corporative performance management.

3. The XBRL projects

The success that XBRL encounters in financial reporting makes that XBRL (closely related to the IFRS) projects to be of strategic importance for all the involved parties. Depending on the established goals, we'd like to distinguish among the next types of XBRL projects:

-Projects of establishing an XBRL committee or organization at national, regional or international level that aim to adapt, develop, encourage and promote the use of XBRL;

-Projects for XBRL taxonomies that aim for a rigorously classification of financial reporting concepts so that the same data to be used for printing and publishing or on-line publishing (both internally and externally), including here the data warehouses for XBRL reports managed by the revenue authorities;

-Projects for adopting XBRL standard by the companies and organizations that "produce" financial reports;

-Management and exploitation of data warehouses that stores data in XBRL format within the "consumer" organizations of financial reports in XBRL format.

The projects of establishing the XBRL national entities (maybe soon XBRL Romania) are the correspondent for an explicit will of partnership in order to create an representative entity for promotion of the national projects, (projects for taxonomies creation/development; XBRL accommodating projects and so on) and to stimulate the dialogue with other regional entities (XBRL International for example).

Conclusions

The migration to the financial reporting over the Internet using the XBRL format it's a strategic decision within the global context and in accordance with accounting and financial reporting norms (IAS/IFRS, BASEL II, etc.). The use of financial and business reports in a XBRL format offer to the interested parties an important advantage but could also involve specific issues related to the training of users and securing the information exchange. The XBRL is about to become the universal language for financial reporting and a core component of the information systems that deals with automated information exchange between systems according to a taxonomy that answers both internal and external reporting requirements. XBRL takes part to the nucleus of ESG reporting (Environment, Social, and Governance) within a lasting development context. Publishing data in XBRL format on a website opens opportunities for use of search engines for financial information and clever use of the found information.

References

Amza Cosmin - *Sisteme informatice interorganizaţionale*, Ed. Carol Davila, Bucureşti, 2006, ISBN:978-973-708-150-6 (2006)

Florescu Vasile, Tamaş Ilie - *Entreprise étendue et systèmes d'information inter-organisationnels*, Published in: Accounting and Managemetn Information Systems Review, ISSN 1583-4387, Suplement 2006

Hamon, Pierre - *Comprendre XBRL et la taxonomie Comptes annuels. Edition BoD,* ISBN 978-2-8106-0747-1 (2007)

Johnson, David - *XBRL La SOLUTION au SERVICE de la COMMUNICATION FINANCIÈRE, http://johnsondavid.hautetfort.com/files/xbrl_pr_d.a.johnson.2.pdf* (2005)

Richards Jim - *An introduction to XML/XBRL et The anatomy of XBRL instance documents,* Murdoch University (2002)

Teller, Pierre - *Formalisation des normes comptables: vers une ontologie des notions de comptabilité, INFORSID* (2006)

Tudor, Cătălin - *Case study: Using .NET technologies in developing components of the enterprise integrated information systems,* Accounting and Management Information Systems Conference, Bucharest (2006)

XBRL France - *XBRL : Introduction a la technologie XML des rapports financierers,Livre Blanc,Revision1.0, http://www.nbb.be/DOC/BA/XBRL/Pub/Livre%20blanc%20XBRL%20France.pdf*
(2006)