Using the XBRL GL for supporting Organizational Processes

Eva Reyes   Daniel Rodríguez   Javier Dolado

PhD student   Univ. of Alcalá de Henares   Univ. of the Basque Country

-    daniel.rodriguezg@uah.es   javier.dolado@ehu.es

Abstract

Decision making with Information Technologies is a field constantly evolving. XBRL is a well known standard for managing information generated in financial and accounting domains. However, not all information can be straightforwardly coded in XBRL. Many taxonomies are being developed for representing the variety of accounting reports. In this work we explore the possibilities of using the XBRL Global Ledger as support for information related to accounting processes. The main question to tackle is how to map the process information onto the XBRL GL or, conversely, how to put the information of the entries of the GL within the rest of the processes of the organization. An "'ontological approach"' may help in this case.

1 Introduction

One of the common uses of the XBRL (Extensible Business Reporting Language) is to help publish financial statements following any of the taxonomies that have been approved in the corresponding jurisdictions. Thus, that approach is a Financial Reporting one, and we say that in these cases we use the XBRL FR. Although this is the most widespread use of the XBRL language, there is another side of the language that helps to organize the business data. The XBRL GL (which stands for Global Ledger or General Ledger) follows the GL Taxonomy and it enables to manage different types of data: job costing information, charts of accounts, payroll information, etc. Despite the flexibility of the GL Taxonomy,

huge sources of information still lie outside its scope [7] [1].

Modeling the enterprise is a task that has been performed in the last decades from different points of view, trying to cope not only with the details of the transactions happening in the business, but also with the holistic and systemic viewpoints. *Enterprise modeling* is a well known term in the area of business modeling. Currently, one of the most common approaches taken is the "ontology modeling" where all the data, relationships, processes and others are modeled at the conceptual level. The discussion of the relationships between taxonomies and ontologies lies beyond the scope of this paper. The potential extensions of the XBRL in those areas is also outside the goals of the current work. However, there are still many topics that may help extend the uses of XBRL. Having said that XBRL still has room for improvement of the information that can be reported with the language, the aim of this work is to represent *business process information* in XBRL. This lies outside the scope of the FR concept, and is closer to the scope of the GL concept. Some facilities of the language, such as the concept of "Formula" can, potentially, standardize the business rules. In practice, however, the logic of the organization is not yet coded with this concept.

With these ideas in mind we intend to represent in the Global Ledger information related to business or organizational processes. One of the issues to deal with is how to trace the information from the administrative processes within the GL files. Among the different possibilities that could be envisaged, the

present approach simply takes instances from processes and links the corresponding XML files to the GL documents. Processes are defined through ontologies in such a way that the ontology allows to define and extract multiple processes.

Briefly, the structure of the work (not all details are presented in the article) is as follows: First, we describe the XBRL Global Ledger, information structure that is flexible enough to accomodate many XML structures. Second, we introduce the idea of accounting and administrative process, which will be used under an ontology to generate process instances. Those instances will be XML documents that will fed the XBRL GL. Finally we conclude that XBRL still needs more extensions in order to include information coming from the enterprise modeling.

2   The Global Ledger

The XBRL Global Ledger is a concept that intends to be broader than the usual General Ledger from accounting [4] [3]. Cohen describes the XBRL GL as the hub that can link and integrate the different sources of information in a company. The GL can be used for internal and external reporting.

The Global Ledger in its current specification includes the following modules:

- COR (Core). This the most basic taxonomy, which allows to represent basic accounting databases and business transactions.

- BUS (Advanced Business Concepts). This module includes data fields for tracking more accounting details that those found in the COR module

- MUC (Multicurrency). This allows to track more detail for every accounting entry.

- USK (concepts for the U.S. and the U.K.). This is needed in Saxonic accounting (US, UK, Australia, Canada and others)

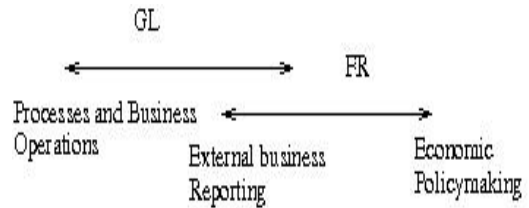- TAF (Tax Audit file). this module adds data fields neede for tax and audit.

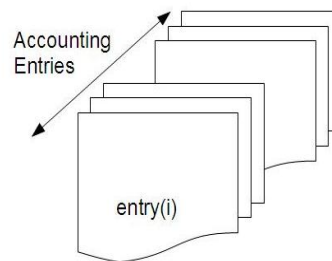Figure 1: The GL and the FR serve different purposes

Figure 2: Graphical view of the structure of the GL

- SRCD (Summary Reporting Contextual Data). This is a recent new addition to the GL. This module allows to link data and documents that have already been summarized in an FR report or in other XML documents.

The XBRK GL intends to be a link to many of the modules that belong to any ERP or business operations. The goals of the GL differs from the FR, and the purpose of the GL is more general than that of the FR structures. Thus, while the FR can deliver all types of financial information, the GL can, potentially, deal with all the information related to business operations (see Figure 1) [2] [5].

The graphical structure of the XBRL-GL is shown in figure 2. A good source of information about the GL can be found at the XBRL

website. The XBRL Working Group has published some notes answering the most usual questions about the relationships between the Global Ledger and the General Ledger (see http://www.xbrl.org/GLWGNotes/XBRL-GL-WGN-FAQ-2007-08-01.htm). Structure 1 describes the main XML data fiels of an XBRL file.

```
<xbrl>
<accountingEntries> ...
   <documentInfo> ...
      <entriesType> ...
   <entityInformation> ...
      <sourceJournalID> ...
      <entryDetail> ...
         <account> ...
         <amount> ...
         <documentType> ...
         <documentNumber> ...
         <xbrlInfo> ...
End of the XBRL file
```

Structure 1: Schema of the Global Ledger

3 Administrative and Accounting Processes

In its simple form, accounting information is generated in a transaction, which is recorded in a journal, and a series of transactions may constitute a specific accounting journal. Part of the accounting information is generated outside the financial departments and there is a need to collect the information from disparate sources. A business or administrative process can be defined informally as a set of interrelated activities that intend to achieve a goal of the organizacion. A process may involve people and several workproducts with the activities. In an organization there may be diferent types of processes. *Process engineering* is a knowledge activity that tries to identify features of the business organization and that tries to propose generic process models. It is not an exact engineering, since the domains may vary and different alternatives can coexist. There are many languages for representing processes (Petri Nets, BPMN and others)

that allow to manipulate the information of the business processes. However, it is possible to define a "'generic process"' at the conceptual level. This can be achieved with the use of ontologies. There is a trend in modeling organizational processes using ontologies [6] [9]. The concept of "ontology" in computer science is that of an specification at high level. Only in a slight aspect can it be interpreted in the phylosophical way. There have been different approaches to process modeling with ontologies. We take this approach too, and we model accounting processes using ontologies. The modeling process defines the high level concepts of the processes using Protegé. Afterwards, process instances are generated and XML code is formatted according the GL Taxonomy. The instances describe different specific processes jointly with the concepts of the ontology, in OWL format. For each one of those instances, the XML code will include the reference to the concepts of "process", "task" and "account" that will allow to link the organization processes to the GL.

4 Mapping onto the XBRL GL

The GL can accomodate many types of information as it can be seen from the different instance files that can be found at http://gl.iphix.net. The result of modeling a process wit Protegé and ontologies is a set of instance files that describe the classes and its relationships. Other works have used the GL Taxonomy for data extraction (see [8]). Not only the process can be coded, but the rules and the results of the queries, too. We are developing an automatic translator from the Protegé output into the GL. Structure 2 shows the main idea of the code that is generated from modeling the process.

```
[set of accounting process instances,
Process[k]]
each Process[k] has tuples in the form
   <ProcessId, TasksId[j]> ...
      and each Task[i] has information
      about its corresponding accounts
```

```
<TasksId[j], Accounts[i]> ...
    which finally will be coded as
    instances of the GL as
<Accounts[i], TasksId[j], ProcessId[k]>
    where the indexes i, j and k, loop
    for each Process k that has j Tasks,
    each one handling i Accounts
End of the "Processes" file
```

Structure 2: Output from modeling processes

5 Conclusion

XBRL is becoming the "de facto" standard for reporting financial information. Much work is being done for developing taxonomies that can accomodate different accounting situations and the GL can be the central repository of much of the accounting information. However, this is not straightforward for many of the business information and some decisions about the information design have to be taken. We have tried to record information created in administrative processes in the XBRL GL. The approach taken here is to extract the accounting information with the help of ontologies and afterwards translate the information into the GL. This is an ongoing work and further research is being carried out.

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