
Original Article

XBRL's Global Ledger Framework: Exploring the standardised missing link to ERP integration

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ABSTRACT With the January 2009 mandate by the US Securities and Exchange Commission of Interactive Data, as well as other governmental mandates and opportunities for compliance burden reductions globally, the Extensible Business Reporting Language (XBRL) is becoming a more common and necessary part of corporate governance and compliance. Due to this external pressure, as well as the primary focus of XBRL advocates themselves to encourage governmental adoption of XBRL for compliance reporting, another important deliverable from XBRL International, Inc. – XBRL's Global Ledger Framework (XBRL GL) – and its obvious and immediate benefits to organisations has been given much less visibility than the external focused efforts; however, XBRL GL has the potential to bring more measurable benefit to companies, in addition to helping support the benefits regulators and the markets receive from more transparent external reporting. XBRL GL serves as a metadata hub (to facilitate system interoperability), as a common face to data from different systems (facilitating common toolsets and controls) and as a tool to enable a seamless audit trail, spanning gaps between systems. XBRL GL seamlessly integrates incoming transactions and external facing reports, acting as a bridge, a single, holistic, generic view of data. While companies can continue to choose proprietary approaches, and while the XBRL Specification itself is sometimes used as the basis for those approaches, it is a proper combination of XBRL GL with XBRL for external reporting that may offer the greatest benefit to companies. While XBRL GL has some obvious potential benefits, the risk to companies and to the market as a whole is that lack of adoption of XBRL GL will lead to a proliferation of proprietary standards at different points in the Business Reporting Supply Chain and for different consumers, such as the world's tax regulators, leading to more confusion and burden instead of providing holistic solutions that provide benefits for all. Those responsible for corporate governance have a responsibility to make sure that interoperability solutions are being chosen with an eye on long-term value, and not just the easiest solution in the short term.

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XBRL: INTRODUCING THE BIGGER PICTURE

By force of law, the Extensible Business Reporting Language (XBRL) has become – or is soon to become – part of most major companies’ compliance regimes. Mandates have been announced in the United States, China, Japan, the United Kingdom and numerous other countries around the world. Those responsible for corporate governance may feel that XBRL is something to be reacted to, delegated as deeply as possible and coped with as best as possible; to the contrary, the goal of XBRL itself is that companies collaborate proactively and then share in the benefits from XBRL as a key participant in the Business Reporting Supply Chain (BRSC) – (see Figure 1).

The goal of this paper is to discuss the larger potential of XBRL in light of (and even where, at least for now, there is still a lack of) mandates, the potential benefits to all involved in the BRSC, and the risk of reacting to, rather than acting on, XBRL efforts globally. Those who understand the greater impact will be able to not only meet compliance requirements more efficiently and communicate with the markets

more fully, but also potentially benefit in many additional ways from the adoption of XBRL’s recommendations.

XBRL – AS A MANDATE – IS HERE

Events since the *Sarbanes Oxley Act of 2002* bring to mind the late comedian and actor George Carlin’s quip, ‘Honesty may be the best policy, but it’s important to remember that apparently, by elimination, dishonesty is the second-best policy’. In response, regulators have been working to make corporate reporting information available in more usable forms and on a more timely basis, so the market can better decide whether they are receiving the truth or not.

On 17 December 2008, the US Securities and Exchange Commission (SEC) voted¹ to mandate² that all public companies begin filing their financial information using *Interactive Data*.³ The Final Rules⁴ were published on 30 January 2009. This phased-in requirement, where approximately 500 of the largest filers will need to begin regularly providing a new companion filing along with (or within 30 days

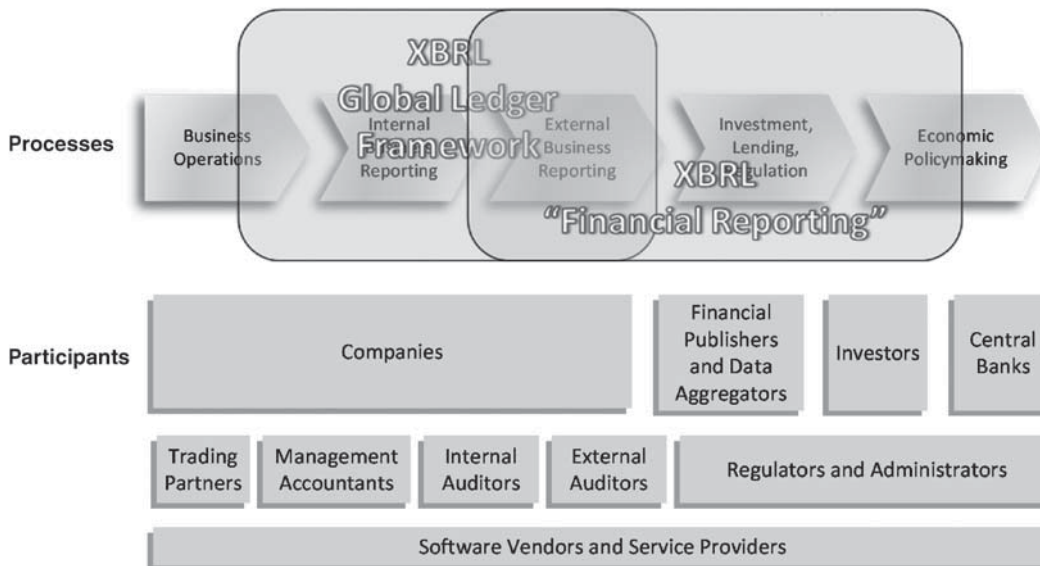


Figure 1: Business Reporting Supply Chain.

after, for the first filing) their first quarterly report for fiscal periods ending on or after 15 June 2009 (and all other companies, including International Financial Reporting Standards (IFRS) filers, join them one or two years later), will make XBRL⁵ a more familiar term to those with responsibilities for accounting and financial reporting, investor relations and information technology. The SEC's *21st Century Disclosure Initiative*⁶ lays out a plan to rethink financial disclosure, and includes XBRL in its foundation.

In the United States, other XBRL mandates include SEC rules related to mutual funds and nationally recognised statistical organisations,⁷ and banking sector regulators working together to share bank call reports in a Central Data Repository.⁸ The SEC is also strongly considering the role of XBRL in oil and gas reporting⁹ and asset-backed mortgages.¹⁰ The vision is one which 'marks the SEC's transition from collecting government-prescribed forms and documents to making the information itself freely available to investors in a user-friendly format they can readily use'.¹¹

XBRL is also a mandatory or optional part of the current or planned reporting regimes of numerous other countries. Japan's Financial Services Agency mandated XBRL filings in April 2008¹²; Singapore's Accounting and Corporate Regulatory Authority has likewise mandated XBRL filings¹³ since late 2007. Israel's ISA has mandated XBRL filings since early 2008; detailed information¹⁴ about mandates in China as well as its mandatory use in Spain and optional use in the Netherlands, Australia and other countries is also widespread.

BENEFITS OF SUCH MANDATES TO REPORTING COMPANIES EXIST, BUT NOT WIDELY KNOWN

The benefits of interactive data to investors and regulators has been clearly expressed by the SEC and by other proponents of XBRL: investor can immediately find and reuse information previously locked within forms and reports

and encourage the development of more standardised tool that can immediately find, analyse and compare reported disclosures for better investment decisions. Those same proponents have not as vocally expressed the immediate value of these filings to the filers themselves – other than better educated investors and the potential for more visibility and transparency.

One result of the lack of communication of the benefits to filers and belief that the primary benefits of XBRL are for the consumers and not the producers is that companies look at XBRL as a compliance exercise, one that should be done with as little 'disruption' to operations as possible. A survey¹⁵ of companies filing XBRL with the SEC's *XBRL Voluntary Financial Reporting Program on the EDGAR System* shows that half of the companies involved outsourced the XBRL process. With very few exceptions,¹⁶ companies made no attempt to embed XBRL into the processes leading to financial reporting; most manually converted finalised reports into their XBRL formatted counterparts.

The approach of treating XBRL as something that must be done in addition to all of the existing processes, as an additional cost rather than as a cost and risk reduction tool, and as an add-on process rather than a way to rethink and improve the existing processes, has been the easy road. With looming deadlines, limited liability, budgets strapped beyond measure and layoffs all around, it may seem that XBRL is something to be reacted to, delegated as deeply as possible, and coped with as best as possible. However, this does not paint the full picture and hides other costs – those associated with risk and control issues and, existing funds earmarked to consolidation and integration that can be invested with greater benefits in a standardised approach.

In this paper, the author will discuss XBRL – not just its role as interactive data filed with the SEC, but also its role in providing a standard mapping to and view of all internal business reporting data, from summarised information down to its most detailed transactional form,



the benefits an organisation can look forward through standardisation involving XBRL, and the risks, costs and difficulties of not embracing a standardised approach to business reporting. XBRL is not just about electronic filing; its introduction can be a catalyst towards remodelling business processes leading to superior and more efficient management oversight and performance.

Tricker¹⁷ (1984) notes that: 'The two key elements of corporate governance concern supervising or monitoring management performance and ensuring accountability of management to shareholders and other stakeholders'. Making sure that management complies with and leverages XBRL in its accountability to stakeholders, as well as leveraging investments in XBRL to change tools and processes for increased competitiveness and performance is therefore an important task for those charged with corporate governance for their organisation. Likewise, seeking to maximise long-term value rather than seeking the 'easiest' solution in the short term is a key responsibility.

XBRL GOES BEYOND FINANCIAL REPORTING AND BEYOND ELECTRONIC FILING

There are many misconceptions about XBRL; some of them are promulgated by XBRL's critics; most are communicated by its proponents (perhaps just in an effort to 'simplify' the description or move forward their own products and services) and even the organisation itself. Some common statements from XBRL proponents state that XBRL is:

- A 'bar code for financial statements'.
- A standardised chart of accounts specific to different regions' financial statements.
- An XML¹⁸ (Extensible Markup Language) based taxonomy¹⁹ with which users can prepare, publish ... exchange and analyse financial statements and the information they contain.
- A description and classification system for financial statement concepts.

- A language used to code and bring meaning and context to financial information.

If you read the papers and press releases, watch the YouTube videos and listen to the webcasts about XBRL, you would be left with one clear picture – that XBRL is limited to financial statements, financial reports and financial information. As important as that is, the concern that XBRL would be associated only with financial reporting is one of the reasons the members of XBRL early on changed the name of the effort from XFRML²⁰ to XBRL – to reflect the broader scope of business reporting. That goal has been stated in this way: that any piece of business information, once entered into any computer, anywhere, should not need to be retyped as it flows through the BRSC, from first trade document or other business event or trigger, through a company's internal systems, to its eventual exchange with any auditor, regulator, administrator, lender, stockholders and others in the capital market.

XBRL is not limited to the numbers and other facts that directly supply financial reporting. XBRL can be as relevant to taxation, to statutory reporting, to statistical reporting, to management reporting, to sustainability reporting and to many other kinds of mandatory and optional, external and internal reporting. As such, it has the potential to be an excellent vessel to communicate all of the value drivers, quantitative and qualitative, that would help stockholders and stakeholders of all kinds, as well as management, in better decision making.

In addition, XBRL is not limited to data; XBRL also allows the standardisation of business rules, known within XBRL as *Formulas*. Formulas allow management to standardise the representation of their business requirements and expectations. This means that, potentially, all of the logic of an organisation's business programmes can be represented externally in a standardised set of rules, analysed and even automatically recreated using different programming languages. The functioning of

such standardised rules is being used by regulators like the Federal Deposit Insurance Corporation (FDIC) to communicate sophisticated requirements to software developers, making it both easier for those developers to keep up with the FDIC's requirements and to move more of the validation requirements of the FDIC to their 'front door', improving data quality throughout the process. (The analogy of the 'front door' is that nothing can enter their system unless it passes certain validation tests, and they have been able to pass more and more of those rules to the reporting companies and software developers; the quality of the information that makes it into their systems has risen significantly.)

Today's financial reporting may convey only a third of the information considered necessary for proper decision making.²¹ For example, managers may know the monetary value of how many units they have sold in various product lines, but seldom have visibility to the quantity of those units. XBRL has a standard to help overcome that limitation – the XBRL Global Ledger Framework,²² known as *XBRL GL* for short.

XBRL'S GLOBAL LEDGER FRAMEWORK

As we have already discussed, XBRL is used to bring agreement on the content and definition of financial and non-financial reports and forms with broad agreement on the content and presentation, such as financial reports and tax returns. That represents the 'external reporting' information in the BRSC. Although it may also be perceived as 'end' reporting, a goal of XBRL is that one organisation's 'end' may be another organisation's 'beginning', and more reusable data will find additional value through later reuse where, in the past, it was the 'end of the line'. However, there is a particular set of taxonomies and a framework for using those taxonomies that is primarily for internal reporting, but not limited to internal reporting – that is XBRL GL.

The primary input to the BRSC would be transactions – trade documents, such as purchase

orders, invoices, payments; electronic standards for trade transactions are being developed separately by major industry groups²³ and jointly by collaborative efforts under various standards organisations.²⁴ Although primarily consumed by internal systems, these transactions, in detail and in summary, become reports on their own. Auditors, banks, trading partners, service providers and other close parties receive detailed end reports, blurring the line between internal and external reporting.

Wherever that line is, the vast space between incoming transactions and outgoing reports, and making any necessary connections between them, is the primary domain of XBRL GL. Some of the business issues XBRL GL attempts to address include:

- Enabling the use of common querying and data extraction and analysis tools across all corporate systems, integrated or proprietary.
- Providing a single view of data against which top down business rules can be applied, improving the controls environment.
- Establishing a common archival format for data from any system, any application and any platform.
- Centralising definitions and acting as a centralised data hub format, facilitating system mapping, data validation and transfer.
- Reducing the need for proprietary mapping and linking, creating more agility,
- Reducing the risks associated with manual reentry and moving data definitions from spreadsheets to centralised locations, while still allowing spreadsheet use where appropriate.
- Enabling more efficient Web Services and Service Oriented Architecture through standardised XML payload.

XBRL GL is a Recommendation²⁵ from XBRL International, a means to holistically and generically represent the building blocks of Enterprise Resource Planning (ERP) systems:



- The agents, or parties, that are involved in trade and other business processes, including customers, vendors, employees, salespeople and banks.
- The resources and other metrics that are exchanged, consumed, used, tracked or measured, including inventory, supplies, services, fixed assets, intangible assets and key performance indicators.
- Event-oriented information, such as the key fields of trade documents.
- Accounting and cost reporting information.
- Tax information by tax type and jurisdiction.
- Other information necessary to populate setup files (such as warehouse locations), master files (such as job costing master), transaction files, history files and summary files.
- Reconciliation tools, such as the ability to capture book versus tax, US GAAP versus IFRS, and permanent and timing differences (see Figure 2), which shows the basic structure to predefine multiple reasons for reporting; separate sets of books, or even single entries that are booked in different ways for different purposes simultaneously can be tracked.

XBRL GL also provides a single framework, the XML-based structure, upon which those building blocks are organised and the rules for modular extension as XBRL GL grows formally (within the XBRL International

collaborative environment) and informally (for a specific organisation). In that way, a company can leverage the existing Global Ledger taxonomies, create any necessary modular taxonomies (which should be minimal, due to the generic and holistic nature of XBRL GL's existing data fields, designed for reuse) and stay within the Framework.²⁶

With XBRL GL, a company can create a standard mapping to and view of all their internal business reporting data, from summarised information down to its most detailed transactional form. Gaps between disparate systems can be bridged using a single, standardised, globally vetted representational tool. In contrast to most integration methods in use today, this 'single view' of data throughout an organisation can be used to establish a *seamless audit trail*, where information at the most summarised level can be traced back to its originating event or document. Most other approaches, such as spreadsheets and data warehouses, are 'one way only' approaches – the information can flow in, but cannot be traced back.

That is not to say that XBRL GL cannot be used to overcome some of the control problems with spreadsheets, data warehouses and consolidation packages. XBRL GL is not software, but a standardised representation and view of the data. As such, XBRL GL can make spreadsheets and other software easier to get data into and out from, with reduced risk and greater return on investment and maintenance of investment as system and business needs change.

This ability to improve the controls environment is especially true when XBRL GL can be combined with XBRL's Formulas or other rules standardisation languages. XBRL GL can provide a common view of data in ERP systems from 'first transaction through to end report', so standardised rules can be applied against data in any system, anywhere, within a single, holistic and generic framework. This can be true even if the data within systems are not actually exported into the XBRL GL format; the abstract model represented by XBRL GL can be associated with the data within a

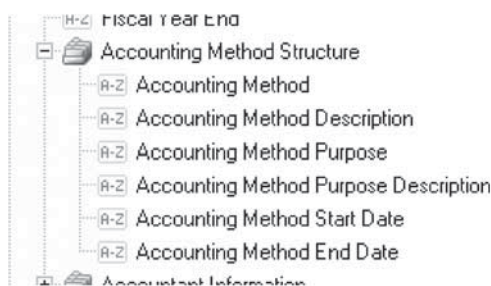


Figure 2: Reconciliation information.

company's systems using modelling languages such as the Unified Modeling Language (UML).²⁷

OTHER APPROACHES TO ENTERPRISE RESOURCE PLANNING INTEGRATION FALL SHORT

Despite the broad understand that using *standards* is accepted as the demonstration of greatest corporate stewardship, various pressures, especially by managers familiar with some particular toolset (such as a particular database, operating platform or mapping tool), may lead the need to use 'standards' to be redefined.

Some companies *pick a particular software vendor's products* as their 'standard'. By adopting a single ERP system, they hope their integration needs are minimised. However, few companies are able to entirely implement a single instance of one version of one ERP vendor's system, and so must develop manual or proprietary means of moving data in to and out from their ERP system.

Adopting a single consolidation package means that some means of converting data from source systems to that consolidation system's proprietary input format is necessary. This approach is not ideal because:

- Converting data to that format is useful only for import and no other use.
- Changes in the target format require all of the relevant source mappings to be redesigned.
- There is often a loss of usable information, as the consolidating system may not permit the collection of important information (such as the units to go with the monetary value of sales information).
- There is no transparency to the source systems directly – only to the data as extracted, normalised and summarised.

Using *mapping tools* (good) – software that lets you turn data from one format into another format – without an agreed-upon holistic

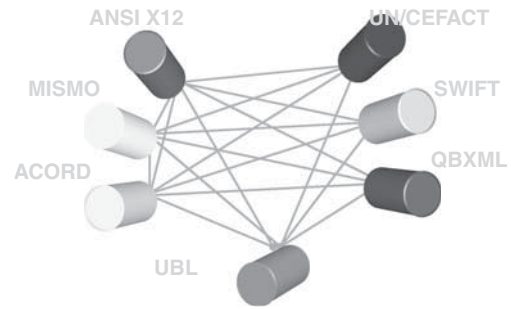


Figure 3: Mapping and the N-squared issue.

model for the information (bad) provides a layer of abstraction that reduces the need to remap if there are changes to systems, but solves few of the other problems described above. Mapping without an intermediary standard (a metadata hub) leads to the need to maintain many more mappings in an integration environment, sometimes known as the N^2 problem. (Figure 3) Where there are n nodes and two one-way maps must be created between every set of nodes, you will have to create $n \times (n - 1)$ mappings. With a centralised data hub, you create $2n$ mappings. For small values of n , the difference is negligible. The difference becomes marked as the number of systems increases, as shown in Figure 4.

Sometimes, a company begins to use XML, or even uses the XBRL Specification (more on this later), but creates their own definitions or uses *proprietary XML formats* created by third parties. While the adoption of XML as a standardised format overcomes important information issues, such as how to represent numbers, decimal points, and dates, and the use of the XBRL Specification, which formalises multi-lingual labels and other business formalities, that approach does little to promote more standardised applications or to minimise proprietary demands from third parties.

Using any of the above solutions not leveraging standardisation is applying a short-term solution to a problem, rather than establishing an environment where information can flow freely and processes can be designed to enhance



For values of n:	$n * (n-1)$	$2n$	Reduction / (Increase)
2	2	4	(100%)
5	20	10	50%
10	90	20	78%
50	2,450	100	96%

Figure 4: Reduction in mappings with metadata hub.

agility. Leveraging legacy systems but being able to replace any system, or to splice a system, divert the information elsewhere, process it and bring it back in with full data integrity, can lead to superior and more efficient management oversight and performance. This includes the ability to more effectively exchange information with internal and external auditors and other important close market parties (vendors, customers, joint venture partners, service providers via Web Services, lenders and others with whom an information covenant may have been created).

Using XBRL GL does not require new systems or any major alteration to get started; in fact, XBRL GL promotes leveraging legacy systems and allows a more controlled approach to system interoperability.²⁸

THE OVERLAP OF XBRL FOR 'FINANCIAL REPORTING' AND THE GLOBAL LEDGER

The integration by design of XBRL GL to other XBRL (as used primarily for end reporting, also known as 'XBRL FR',²⁹ for Financial Reporting or sometimes 'XBRL ER', for external or end reporting) raises questions related to when to use one approach (using and expanding on the existing Global Ledger taxonomies using the XBRL GL approach) over the other (creating new taxonomies using an XBRL FR approach). XBRL GL was designed to seamlessly interface with more traditionally external-facing XBRL FR taxonomies, and there are obvious advantages and disadvantages to using customer 'financial reporting' taxonomies to represent information compared with using the more generic Global Ledger.

XBRL FR concentrates on formalising sets of lists (such as accounts and financial reporting concepts). It associates the list entries with definitions, descriptions, authoritative references and rules-based relationships with each other. Data documents based on those lists (instance documents based on the taxonomies) can contain values (numeric and textual) associated with each concept on the list; the concepts can be easily compared with the list so that the values and the existence of each concept can be validated.

The Global Ledger does not concentrate on reporting concepts or accounts, although it standardises how they might be interchanged; XBRL GL instead concentrates on standardising the data fields that store that information. In Figure 5, the account structure, represented with its human readable labels instead of element names, is shown with two key fields highlighted to show how simple data related to an account can be easily represented without extension. XBRL GL also can associate every piece of detail with an XBRL FR-defined concept, leveraging the power of XBRL FR's validation with XBRL GL's standardisation of common business building blocks. The converse is not true; XBRL FR does not easily contain clues about the detail from which its summarisations come.

Those familiar with the concepts of data warehouses may be able to visualise this difference easily. Detailed information exists in the operational and accounting system. Certain key fields are chosen in order to summarise the data but still be able to do important queries. Fields like customer type or product category might be maintained, perhaps at a more

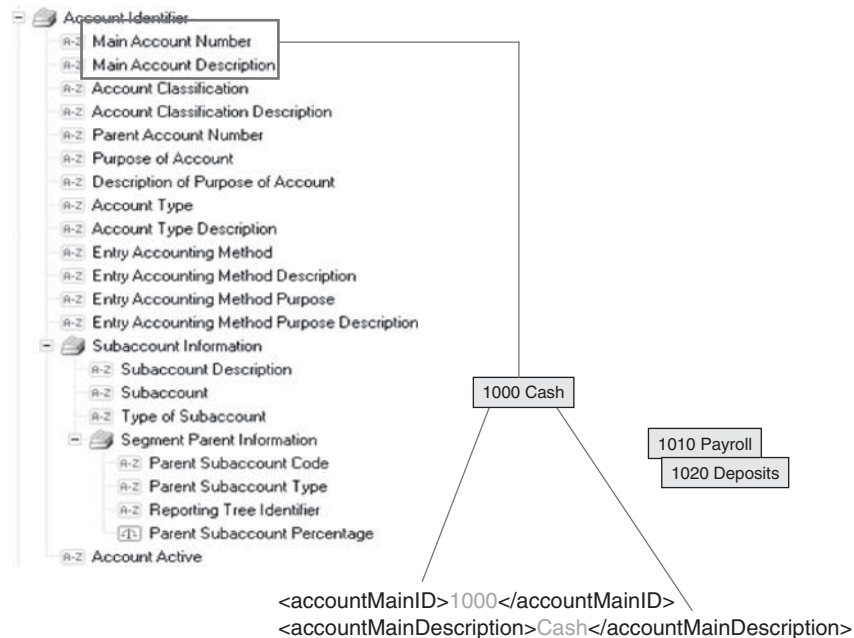


Figure 5: XBRL GL's account structure.

summarised level than found in the operational system; instead of maintaining each individual region (for example, US Northeast, US Northwest, Southeast Asia), the data warehouse may be queried on more summarised regions (for example, Americas, Asia). While the audit trail can be followed from detail to summary, the use of summary dimensions, the index for identifying values within multi-dimensional arrays, such as the typical data warehouse, means you cannot easily follow the audit trail back from summary to its underlying detail.

A key area where the Global Ledger and XBRL FR approaches overlap is the trial balance, the report that has a list of accounts (or similar classification codes) and their values at a point in time (or for a period of time). The FR approach will shine at validation; the GL approach is much easier and lends itself to integration with and representing more detail.

With an XBRL FR approach, to represent the data in a trial balance, someone must first create a taxonomy that represents each account that will appear at a point in time and each account that will appear for a period of time

in the trial balance. An instance document can then be created referencing that taxonomy, using the concepts defined there to associate meaning to each fact (such as the balances).

The primary advantage of an FR approach is that this provides a formal method for communicating the accounts and strong validation of the instance data. This approach, unlike the XBRL GL approach, will require the creation and maintenance of the taxonomy.

For the simplest trial balance, each concept is defined once (balance sheet items at an 'instant' in time, income statement balances for a 'duration' of time) when using an FR approach. However, for other types of trial balances, such as one that shows a beginning balance, followed by debits for the period, credits for the period and culminating in ending balance, each concept (for example, Cash) must be defined *multiple times* in the taxonomy: Cash, a balance sheet item, in the situation described would have to be defined at least twice (once for the balance at the beginning and end of the period, an 'instant'; at least once for the current period change column, 'duration' items).



Subaccounts in an FR approach are likewise predefined in a taxonomy using XBRL Dimensions. Accounts and subaccounts must be formally associated. The strength is that, once again, there is strong validation of whether subaccounts are properly associated with accounts without additional programming. However, there is still no link to underlying transactions, just the establishment of more detailed reporting.

In contrast, XBRL GL does not require any changes to the underlying taxonomies to represent any chart of accounts, simple trial balances or complex trial balances. In fact, a business document can be represented with XBRL GL; the accounting can be added later; it can be summarised by account, by date, by source journal or any number of other attributes; it can be associated with its end reporting concept – or multiple concepts simultaneously, such as US GAAP, US Tax and IFRS – all using the same taxonomy with no alteration.

XBRL GL has a special taxonomy module known as the 'Summary Reporting Contextual Data' (SRCD) module. These fields can be seen in Figure 6. This taxonomy extends the existing links between XBRL GL and XBRL FR, formalising how an XBRL GL instance can contain all of the necessary data to unambiguously link any detail to a specific end reporting concept, or even a very specific fact in a specific FR instance document. The converse is not true: although you can associate that specialised chart of accounts taxonomy with a standardised US GAAP or IFRS taxonomy, there is no standardised way within an XBRL FR instance to unambiguously identify the journal entries or transactions that were summarised to the accounts associated with that instance.

XBRL FR approaches can be used to model and represent the same data as XBRL GL; XBRL GL can be used to represent end-reporting data, even using the same elements as an XBRL FR taxonomy defines. For shared meaning of summary concepts with strong validate – typical for end reporting – XBRL FR approaches make the most sense. For reusable

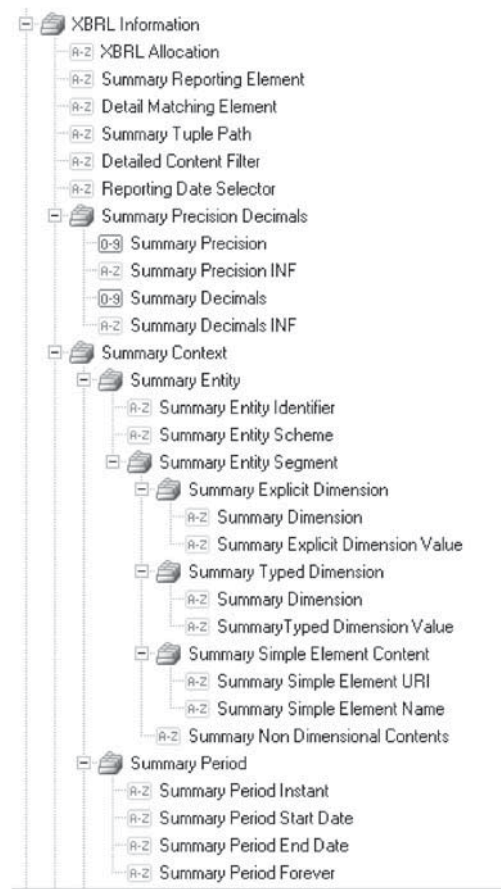


Figure 6: XBRL links enhanced with SRCD module.

components with greater shared meaning of the data fields, rather than the concepts they hold, XBRL GL is the obvious choice.

BEYOND FINANCIAL REPORTING AND BUSINESS DATA TO RISK AND CONTROL

Companies are using XBRL for purposes beyond capturing the quantitative and qualitative data that flows 'from first transaction through end report', starting off in great detail and then being summarised in various ways and forms. One of these additional purposes is using XBRL for managing and reporting on the risks and controls associated with their business processes and that associated data.

Numerous sessions related to governance, risk and control related to XBRL were provided at the 18th XBRL International Conference in Washington DC.³⁰ One group dedicated to this specific area, the Open Compliance and Ethics Group (OCEG), has joined XBRL International and established a provisional XBRL jurisdiction following strong interest in the use of XBRL by its members and adoption of XBRL by the organisation's GRC-XML Program working group. OCEG, as of this writing, is submitting its first taxonomies to XBRL International for acknowledgement³¹ and broader publication.

Fujitsu, a leading provider of IT-based solutions for the global marketplace, recently joined³² OCEG with a goal of 'advancing the understanding and application of information technology to GRC, especially as it relates to XML and XBRL adoption'. Fujitsu as a company has been demonstrating the results of their own internal implementation bringing together XBRL for end reporting, XBRL GL and XBRL for risk and controls, and other governance issues.³³

Reducing information friction with XBRL GL may be a key step to enabling new reporting and control environments. The continuous auditing and reporting community,³⁴ for example, has long considered the value of XBRL-enabled data and controls standardisation as a key to reducing or removing barriers necessary to make more frequent, more detailed, more real-time reporting possible.

RISKS OF NON-INVOLVEMENT

The movement around XBRL has indicated an important change in how reporting requirements and options are developed. While some report-oriented rule making was done in at least a semi-transparent manner – where the authority posts a draft and seeks comments before finalising the rules – much of it, especially in the electronic filing format of the necessary data, is created behind closed doors (reminiscent of the old adage 'Laws are like sausages, it's better not to see them being made').

Certain authorities around the world, especially those with administration oversight over taxation, have been developing their own electronic requirements for the formats of files they hope to receive from businesses for tax collection and audit purposes, either individually, such as the US Internal Revenue Service, which has posted its XML definitions,³⁵ to collaborating groups within organisations like the Organization for Economic Cooperation and Development. From personal interaction with them, the author is aware that they would generally be pleased if standardised XBRL GL extracts and reports were available from companies' systems – something which is recognised in their reporting, such as:

It is entirely a matter for revenue authorities to develop their policies for implementation of SAF-T. However, revenue authorities should be aware of the on-going development of XBRL GL, which could offer a more holistic approach to audit. They should also be aware of international efforts to develop data standards for compliance needs under the formal OASIS Tax XML Committee.

In their implementation strategy for SAF-T, revenue authorities should consider data formats that permit audit automation today while minimizing potential costs to all stakeholders when moving to new global open standards for business and financial data such as XBRL GL.³⁶

Those responsible for corporate governance can consider the value to their stakeholders of active involvement with rule makers and organisations with oversight responsibilities to collaborate on information requirements for their mutual benefit, as opposed to simply responding to demands from those overseers. The opportunity to sway governments and others into holistic, rather than government-centric, approaches is very real.

OPPORTUNITIES TO ACTION

In these difficult economic times, management is often challenged when it comes to financial



investments. The days of 'spend €10000 today and save €100000 over the next 3 years' are on hold. However, money is being spent on system integration, controls and new ERP systems where that same money could be going to a standardised approach with a greater short-term return on investment.

Those responsible for corporate governance can act to learn more about XBRL GL through resources available on the Web,³⁷ at XBRL conferences,³⁸ through publications³⁹ and especially through the establishment of pilot projects to test the waters and the relevance to a company's needs.

A pilot project can build confidence and credibility, and showcase how a generic and holistic standard can be reused, over and over again, for projects that would otherwise require starting from scratch. Lessons can be learned from a conference room prototype, solving one small but nagging problem, and then building on it. Sample focused projects that show the broad scope of XBRL GL's representational capabilities range from the country to the city.

The 'country' project involved evaluating if XBRL GL, through its ability to represent transactions from many different industries in a single generic way, can help a government establish the 'seamless audit trail' related to Bovine Spongiform Encephalopathy ('Mad Cow disease'). Where different transactional formats are involved, as grain and fertiliser are purchased and provided to animals, as the animals are processed, and as food moves to the market, XBRL GL can represent these movements and uses, and provide a single view of the data for analysis and query.

The 'city' project involved evaluating XBRL GL as a consolidation and accounting tool to move the transactions related to taxis in a particular region to a centralised hub for analysis and bookkeeping purposes. XBRL GL has no problems with different monetary units, metric versus imperial units of measure or language issues.

CONCLUSION

What about those common statements related to XBRL?

- More than just a 'bar code for financial statements', XBRL's scope extends beyond financial statements to all of the information in the BRSC and capabilities reach beyond simple machine readability.
- Not just 'a standardised chart of accounts specific to different regions' financial statements', XBRL standardises the representation of data from first transaction through end reporting.
- Although XBRL is all about 'XML-based taxonomies' and instance, it is not limited to financial statements, but can be used for any business report or form, or the underlying data that are captured, analysed, gathered, assured, summarised and prepared for those reports and forms.
- More than a description and classification system for financial statement concepts, XBRL includes not only data, but also the potential to capture business rules, processes and controls as well.
- Therefore, it goes far beyond 'a language used to code and bring meaning and context to financial information'.

The benefits an organisation can look forward through standardisation involving XBRL and especially XBRL may include:

- Improvement in information integrity and value to the business.
- Better control of the data flow through the company.
- Reduction in the time and effort required to collect, format and reconcile data from different information systems, and turn data into valuable information.
- Reduction of costs through the use of standard processes, eliminating redundant efforts and containing the proliferation of multiple reporting tools, data marts and

other technologies resources through the enterprise.

- Improvement of operations by increasing the reliability of critical information assets for management decision-making.
- Improvement of operations by decreasing the time required to reconcile independently generated reports.
- Improvement to audit, controls and reconciliation processes, facilitating the resolution of data issues at the source rather than in downstream processes.

Those responsible for corporate governance need to consider those benefits, as well as the risks of choosing ‘simpler’ and non-standardised approaches:

- Reduced value of one-to-one mappings.
- Loss of investment as systems change.
- Reduced agility.
- Inability to ‘share the costs’ of standardisation with others by moving development outside of the organisation.
- Reduced ability to communicate with third parties and even internally.
- Increased risks of customisation and manual entry.

Having a more complete view of XBRL than ‘it is a technical thing we have to do to meet the SEC’s requirements’ is important for companies that wish to be competitive and meet their responsibilities to their stockholders and stakeholders. Management will be making decisions and investments in systems and processes; proper consideration of XBRL will provide longer-term value in those investments.

REFERENCES AND NOTES

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- 3 <http://www.sec.gov/spotlight/xbrl.shtml>.
- 4 <http://sec.gov/rules/final/2009/33-9002.pdf>.
- 5 <http://www.xbrl.org>.
- 6 <http://www.sec.gov/disclosureinitiative/report.pdf>.
- 7 <http://www.sec.gov/news/press/2008/2008-284.htm>.
- 8 Resulting in an immediate and ‘drastic’ increase in data quality, according to <http://www.intelligententerprise.com/showArticle.jhtml?articleID=177105815> – see also the business case whitepaper at <http://www.xbrl.org/us/us/FFIEC%20White%20Paper%2002Feb2006.pdf>.
- 9 <http://www.sec.gov/rules/final/2008/33-8995.pdf>.
- 10 <http://www.financialweek.com/apps/pbcs.dll/article?AID=/20081015/REG/810159987/1036>.
- 11 <http://idea.sec.gov/spotlight/idea.shtml>.
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- 13 http://www.acra.gov.sg/Services/Company/Filing_of_Financial_Statement_in_XBRL.htm.
- 14 Documented in <http://www.journalofaccountancy.com/Issues/2008/Oct/XBRLAroundTheWorld.htm>.
- 15 <http://www.journalofaccountancy.com/Issues/2008/Feb/SixStepstoXBRL.htm>.
- 16 <http://www.journalofaccountancy.com/Issues/2007/Jun/RoiOnXbrl.htm>.
- 17 Tricker, R. I. (1984) *Corporate Governance*. Aldershot, Hampshire, UK: Gower Publishing.
- 18 <http://www.w3.org/XML/>.
- 19 The word ‘taxonomy’ conjures up different, but very clear pictures in some reader’s minds. To some, it is a simple hierarchical classification scheme. In the world of XBRL, taxonomy is more than a hierarchical dictionary, containing descriptions, definitions, interrelationships, formulas, rules and more.
- 20 XML-based Financial Reporting Markup Language.
- 21 <http://www.ebr360.org/ContentPage.aspx?ContentPageId=3>.
- 22 <http://www.xbrl.org/GLTaxonomy>.
- 23 Examples of industry-specific efforts include insurance data standards from ACORD (www.acord.org); MISMO is the Mortgage Industry Standards Maintenance Organization (www.mismo.org); and HL7 (Health Level 7) for health care industry clinical and administrative standards (www.hl7.org).



- 24 Collaborative efforts in representing electronic trade documents include the Open Applications Group (www.oagi.org), UBL (Universal Business Language – http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=ubl), and UN/CEFACT (<http://www.unece.org/cefact/>).
- 25 More on the Recommendation can be found at <http://www.xbrl.org/GLTaxonomy> and <http://www.xbrl.org/GLFiles>.
- 26 As defined in the Global Ledger Taxonomy Framework Technical Architecture (GLTFTA) document found at <http://www.xbrl.org/int/gl/2007-04-17/GLTFTA-REC-2007-04-17.rtf> – the better known counterpart in the Financial Reporting space is the Financial Reporting Taxonomy Architecture document ('FRTA').
- 27 A collaborative effort to extend UML with special functionality related to XBRL GL is described at <http://www.omg.org/cgi-bin/doc?finance/2008-12-2>.
- 28 This is shown in a number of implementations of XBRL GL, including the landmark Wacoal implementation, as described in the March 2004 issue of *Strategic Finance*; a copy of that article is available at http://www.xbrl-nederland.nl/upload/21/Breathing_New_Life_into_Old_Systems.pdf.
- 29 Although there is no formal 'XBRL FR' per se, there are numerous sets of rules incorporating the 'FR' distinctive, such as the guidance documents FRTA and Financial Reporting Instance Standards, which have GL counterparts.
- 30 <http://18thconference.xbrl.org/>.
- 31 Acknowledged taxonomies can be found at <http://www.xbrl.org/FRTAcknowledged/>.
- 32 <http://www.oceg.org/Details/FujitsuTC>.
- 33 Their presentations can be found in the conference archives and a webcast describing their project from 2006 can be found at http://iphix.net/gl/webcasts/XBRLGL_Fujitsu_2006-07-20.wmv.
- 34 Such as the regular participants at the conferences described at <http://raw.rutgers.edu>.
- 35 <http://irs.gov/taxpros/providers/article/0,,id=101145,00.html>.
- 36 From the document included with the Guidance for the Standard Audit File (http://www.oecd.org/LongAbstract/0,3425,en_2649_33749_34910278_1_1_1_1,00.html).
- 37 XBRL GL resources on the XBRL web site can be found at <http://www.xbrl.org/GLTaxonomy> and <http://www.xbrl.org/GLFiles>; a series of webcasts and examples of data expressed in XBRL GL can be found at <http://gl.iphix.net>.
- 38 <http://conference.xbrl.org>.
- 39 The publication of the Institute of Management Accountants, *Strategic Finance*.
- 40 <http://www.xbrl.org/ca/fr/gaap/pfs/2007-01-19/ca-gaap-pfs-2007-01-19.htm>.
- 41 <http://www.iasb.org/XBRL/IFRS+Taxonomy/Latest+Taxonomy/Latest+taxonomy.htm>.
- 42 As previously noted, the Global Ledger Practices Guide for Study web site, at <http://gl.iphix.net>.

APPENDIX

Technical backgrounder on XBRL GL

XBRL's GL Framework can represent the data that are represented in a typical ERP system, from detailed representations of incoming trade documents to trial balances and final summary representations.

Examples of XBRL GL in use are available at the Global Ledger Practices Guide for Study, or GaLaPaGoS, at <http://gl.iphix.net>.

A reusable structure

Every XBRL GL instance is based on XBRL GL's reusable structure:

1. It is an XBRL instance document, which
2. Contains one to an unlimited number of groupings of data, delimited by the tag `<gl-cor:accountingEntries></gl-core:accountingEntries>`,
3. Each of which represents a similar batch of information, which is communicated through the tag `<gl-cor:entriesType>`.

There is a fixed list (known as 'enumerations') of common types of batches of infor-

mation, such as a *trial balance*, an *account list* (which is a much broader category of items than people may first think), an *asset listing* (of things that tie to a trial balance, for example) and journal *entries*.

Those batches can work together; a listing of some kind of transactions in one accountingEntries batch can be associated with the inventory item master file, represented by another accountingEntries batch, and with the customer master file, as represented by yet another accountingEntries batch, all within a single XBRL instance document. This permits the producer of the file to choose to normalise the data more (separating it into separate topic specific batches) or denormalise the data into one monolithic batch.

4. Each accountingEntries structure can also contain the information about the organisation whose data are being reported upon, including various codes by which it is known to different authorities, addresses, primary contacts, types of reporting and reporting calendars. XBRL GL is unique in its ability to be used for reconciliation, as we already saw with one structure shown back in Figure 2; it can also track by design the difference between permanent and timing differences, important for tax reconciliations.

5. The batches of data are then included in <gl-cor:entryHeader> tags, which store information related to batches of similar information, such as the source journal and who made and authorised the batch of entries, and then holds any necessary detail lines of information, in <gl-cor:entryDetail> structures.

6. It is at this detailed level that important building blocks are associated. Information about underlying source documents (what type of document, document number, document date, due date if applicable and even where that document can be obtained right now), the parties (customers, vendors, employees and others) that are associated with the detail, the resources (inventory, supplies, services, fixed assets, key performance indicators and others) that are consumed, exchanged, used or

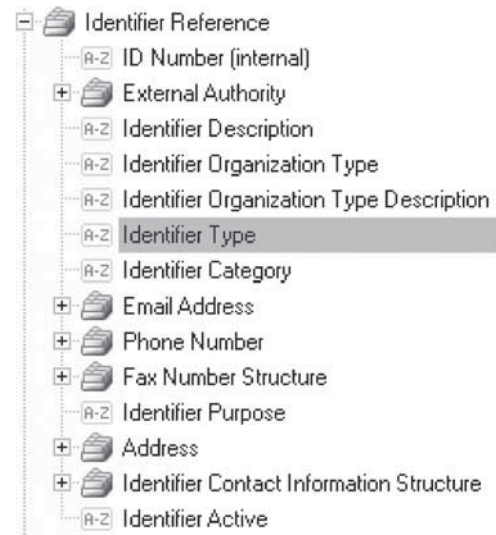


Figure 7: Customers, vendors, employees and others.

tracked, jobs, taxes and accounts are tracked at this level.

We saw back in Figure 5 that XBRL GL has a sophisticated account (and subaccount) structure; the reusable structure for parties is shown in Figure 7, with its many substructures collapsed for brevity's sake. The resources structure can track resources and associated information whether numeric (for example, 5000 cycles), qualitative ('satisfactory performance') or time constrained (operated from 0500 hours EST to 2000 hours EST).

Reusing the building blocks

To see XBRL GL at work – how XBRL GL represents the data in ERP systems from 'first transaction through to end report', leveraging the extensible framework and the reusable building blocks, I have illustrated four different groupings of sample ERP data:

1. A 'setup' file;
2. A master filer;
3. A mapping file; and
4. A trial balance

Setup files

Setup files are foundational files in business systems. These files tend to 'stand alone' – not rely on other files, but define codes that other files – in particular master and transaction files – will reuse.

Through different combinations of the building blocks and related enumerations to guide the way, XBRL GL can be used to represent setup files, such as this extract from a reporting period file, with the content represented here, followed by its representation with XBRL GL.

Reporting calendars are established for a number of purposes. They help users validate that transactional entries are entered into appropriate reporting periods, as well as to help summarise reports into different time buckets for different reporting purposes.

A reporting period data entry screen might look like the following:

Report Name: Standard Calendar for FYE 2009						
Reporting Purpose: For Book purposes						
Status: Open						
Period type: 4-5-4						
	Period	Description	Start	End	Closed?	Date closed
	1	January	1/1/09	1/31/09	Closed	2/22/09
	2	February	2/1/09	2/28/09	Open	
	3	March	3/1/09	3/31/09	Open	
	...					
	12	December	12/1/09	12/31/09	Open	

The same information can be represented in XBRL GL. The relevant information is specifically expressed using the standardised reporting period structure.

```

<?xml version="1.0" encoding="UTF-8"?>
<?xml version="1.0" encoding="utf-8"?>
<xbrli:xbrl ... xsi:schemaLocation="http://www.xbrl.org/int/gl/plr/2006-10-25 ../plr/case-c-b/gl-
plr-2006-10-25.xsd">
<xbrli:schemaRef ... xlink:href="../plr/case-c-b/gl-plr-2006-10-25.xsd"/>
  <xbrli:context id="now">
    <xbrli:entity>...</xbrli:entity>
    <xbrli:period><xbrli:instant>2009-05-31</xbrli:instant></xbrli:period>
  </xbrli:context>

<!-- Information about a calendar as a whole goes here -->
<gl-cor:accountingEntries>
  <gl-cor:entityInformation>
  <gl-bus:reportingCalendar>
  <gl-bus:reportingCalendarCode contextRef="now">SC2009</gl-
bus:reportingCalendarCode>
  <gl-bus:reportingCalendarDescription contextRef="now">Standard Calendar
2009</gl-bus:reportingCalendarDescription>
  <gl-bus:reportingCalendarTitle contextRef="now">Fiscal YE 2009</gl-
bus:reportingCalendarTitle>
  <gl-bus:reportingCalendarPeriodType contextRef="now">4-5-4</gl-
bus:reportingCalendarPeriodType>
  <gl-bus:reportingCalendarOpenClosedStatus contextRef="now">open</gl-
bus:reportingCalendarOpenClosedStatus>
  <gl-bus:reportingPurpose contextRef="now">book</gl-bus:reportingPurpose>

<!-- Information about an individual period goes here -->
  <gl-bus:reportingCalendarPeriod>
  <gl-bus:periodIdentifier contextRef="now">1</gl-bus:periodIdentifier>
  <gl-bus:periodDescription contextRef="now">January</gl-bus:periodDescription>
  <gl-bus:periodStart contextRef="now">2009-01-01</gl-bus:periodStart>
  <gl-bus:periodEnd contextRef="now">2009-01-31</gl-bus:periodEnd>
  <gl-bus:periodClosedDate contextRef="now">2009-02-22</gl-bus:periodClosedDate>
  </gl-bus:reportingCalendarPeriod>
...

```

Master files

A master file is similar to a setup file, although they often rely on setup files for standardised codes. Examples of common master files include customers, vendors, employees, inventory items, jobs and fixed assets.

In this example of a snippet from a master file, there is information from a fixed asset file, representing a specific fixed asset, its default general ledger account and that it is here primarily for tracking its depreciation for IRS purposes:

Fixed asset number:	L012
Fixed asset description:	Main Sculley Street Land (1 parcel)
Basis	\$5,000
Default asset account:	1400 Land
Depreciation	Federal 40 years, SL

The XBRL GL representation of this data leverages the *measurable* structure, which tracks inventory, supplies, services, intangible assets, key performance metrics and – as illustrated here – fixed assets.

```
<gl-cor:entryDetail>
<gl-cor:lineNumber contextRef="now">2</gl-cor:lineNumber>
<gl-cor:account>
  <gl-cor:accountMainID contextRef="now">1400</gl-cor:accountMainID>
  <gl-cor:accountMainDescription contextRef="now">Land</gl-
cor:accountMainDescription>
  <gl-cor:accountPurposeCode contextRef="now">tax</gl-cor:accountPurposeCode>
  <gl-cor:accountType contextRef="now">account</gl-cor:accountType>
</gl-cor:account>
<gl-cor:amount contextRef="now" decimals="2" unitRef="usd">5000</gl-cor:amount>
<gl-cor:postingDate contextRef="now">1917-02-02</gl-cor:postingDate>
<gl-bus:measurable>
  <gl-bus:measurableCode contextRef="now">FA</gl-bus:measurableCode>
  <gl-bus:measurableCategory contextRef="now">Land</gl-bus:measurableCategory>
  <gl-bus:measurableID contextRef="now">L012</gl-bus:measurableID>
  <gl-bus:measurableDescription contextRef="now">Main Sculley Street Land</gl-
bus:measurableDescription>
  <gl-bus:measurableQuantity contextRef="now" unitRef="na" decimals="0">1</gl-
bus:measurableQuantity>
</gl-bus:measurable>
<gl-bus:depreciationMortgage>
  <gl-bus:dmJurisdiction contextRef="now">F</gl-bus:dmJurisdiction>
  <gl-bus:dmMethodType contextRef="now">SL</gl-bus:dmMethodType>
  <gl-bus:dmLifeLength contextRef="now">40</gl-bus:dmLifeLength>
</gl-bus:depreciationMortgage>
</gl-cor:entryDetail>
```

Mapping file

A mapping file associates something with something else – simple enough. Common in many ERP systems, a mapping file might associate a customer with the products they routinely purchase, a vendor with the goods management has determine can be purchased from them, or the accounts used for US GAAP with their counterparts used for IFRS reporting.

XBRL GL is unique in its ability to associate an account or a transaction with multiple end reporting concepts, as captured in XBRL taxonomies or other XML schema reports, such as those defined by the US Internal Revenue Service.

For example, a company may wish to store for later use a mapping file that indicates that their primary cash account (account 1000, entitled 'Cash and deposits') should be summarised to the Canadian GAAP concept 'CashCashEquivalents' as defined in the Canadian GAAP taxonomy⁴⁰ but – if creating an IFRS report instead – would summarise to the IFRS concept 'CashAndCashEquivalents' found in the IFRS taxonomy.⁴¹

This mapping can be represented using XBRL GL, as expressed in this snippet of XBRL associating an account with multiple end reporting concepts:

```
<gl-cor:entryDetail>
  <gl-cor:account>
    <gl-cor:accountMainID contextRef='now'>1000</gl-cor:accountMainID>
    <gl-cor:accountMainDescription contextRef='now'>Cash and deposits </gl-
cor:accountMainDescription>
    <gl-cor:mainAccountType contextRef="now">asset</gl-cor:mainAccountType>
    <gl-cor:accountPurposeCode contextRef="now">tax</gl-cor:accountPurposeCode>
    <gl-cor:accountPurposeDescription contextRef="now">GIFI
  </gl-cor:accountPurposeDescription>
    <gl-cor:accountType contextRef="now">account</gl-cor:accountType>
  </gl-cor:account>

  <gl-cor:xbrlInfo>
  <gl-cor:summaryReportingElement contextRef='now'>ca-gaap-pfs:CashCashEquivalents</gl-
cor:summaryReportingElement>
  </gl-cor:xbrlInfo>

  <gl-cor:xbrlInfo>
  <gl-cor:summaryReportingElement contextRef='now'>ifrs-gp:CashAndCashEquivalents</gl-
cor:summaryReportingElement>
  </gl-cor:xbrlInfo>

</gl-cor:entryDetail>
```

In the above example, if you omit the *account* structure, you find an equivalency of sorts being represented in the relationship between the Canadian GAAP and IFRS taxonomies.

Trial balance

The last example I will provide here – but not the end of the road necessarily for XBRL GL – is a traditional trial balance. XBRL GL can be used to easily represent simple trial balances – with the ending balance only – or more elaborate trial balances with beginning balances, period changes and ending balances.

A trial balance, expressed in Canadian dollars, that looks like this:

Account	Description	Dr	Cr
1080	Bank: Current	115,218	
1100	Payroll	70,337	
2000	Accounts Payable		43,457
2200	Notes Payable		45,008
3000	Capital		192,990
5000	Sales		48,100
6000	Cost of sales	144,000	


```

<gl-cor:entryDetail>
<gl-cor:lineNumber contextRef="now">1</gl-cor:lineNumber>
<gl-cor:account><gl-cor:accountMainID contextRef="now">1080</gl-cor:accountMainID>
<gl-cor:accountMainDescription contextRef="now">Bank: Current</gl-
cor:accountMainDescription>
<gl-cor:accountPurposeCode contextRef="now">primary</gl-cor:accountPurposeCode>
<gl-cor:accountType contextRef="now">account</gl-cor:accountType>
</gl-cor:account>
<gl-cor:amount decimals="0" contextRef="now" unitRef="cad">115218</gl-cor:amount>
<gl-cor:debitCreditCode contextRef="now">D</gl-cor:debitCreditCode>
<gl-cor:postingDate contextRef="now">2008-04-21T00:00:00-07:00</gl-cor:postingDate>
</gl-cor:entryDetail>

<gl-cor:entryDetail>
<gl-cor:lineNumber contextRef="now">2</gl-cor:lineNumber>
<gl-cor:account><gl-cor:accountMainID contextRef="now">1100</gl-cor:accountMainID>
<gl-cor:accountMainDescription contextRef="now">Bank: Payroll</gl-
cor:accountMainDescription>
<gl-cor:accountPurposeCode contextRef="now">primary</gl-cor:accountPurposeCode>
<gl-cor:accountType contextRef="now">account</gl-cor:accountType>
</gl-cor:account>
<gl-cor:amount decimals="0" contextRef="now" unitRef="cad">70337</gl-cor:amount>
<gl-cor:debitCreditCode contextRef="now">D</gl-cor:debitCreditCode>
<gl-cor:postingDate contextRef="now">2008-04-21T00:00:00-07:00</gl-cor:postingDate>
</gl-cor:entryDetail>

```

Journal entries and simple trial balances are very similar – a starting trial balance is often created through a single journal entry.

A wide variety of additional representations taken from a typical accounting system, with representations ranging from detailed transactions through various summaries, such as ‘Job Costing summary, actual versus budget’, can be found at GaLaPaGoS.⁴²

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