1.5. Getting a Grip on XBRL Fundamentals

Fundamentally, XBRL is a language that lets you effectively and efficiently bridge the perceived artificial boundaries between business systems, exchanging business information between those systems, be they internal or external to your organization. After all, there is only one Web, and we're all connected to it. Why should exchanging business information be so hard? How does XBRL make this information exchange process easier?

A simple example of exchanging information can help you understand how XBRL works. Chapter 4 dives deeper into the details, but for now, we keep this simple and focus on what's important in understanding the big picture. Figure 1-2 shows an example business report.

The figure shows a condensed set of financial highlights with which you should be comfortable. The information in the report is for Example Company. Two periods are shown, 2009 and 2008. Information is expressed in thousands of dollars. Two line items are shown: Net Income (Loss) and Sales, Net. Although this example is simple, it helps keep you focused on what is important.

**Figure 1.2. A simple example business report.**

```
Example Company
December 31,
(thousands of dollars)

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Net Income (Loss)</strong></td>
<td>5,347</td>
<td>1,147</td>
</tr>
<tr>
<td><strong>Sales, Net</strong></td>
<td>244,308</td>
<td>366,375</td>
</tr>
</tbody>
</table>
```

Simply put, XBRL is a language that lets you build what you probably typically think of as a report. This report is a physical document, just like other documents you're familiar with: a word-processing document, a spreadsheet, or maybe a PDF file. Like these reports, XBRL also has a document. The XBRL document, also called an XBRL instance, is built in the form of an electronic file and contains business information.

**NOTE**

You may hear this type of XBRL document called an XBRL instance, instance, instance document, maybe XBRL instance document, or even XBRL report. In this book, we refer to it as an XBRL instance. Within this introductory section, we may use the more familiar term report at times.

An XBRL instance has four main parts:

- **Values:** The values are the text (individual values or entire narratives) and numbers in the report, the business information. Generally, the text and numbers come from some sort of business system, such as an ERP system or a spreadsheet. For example, a value would be a number like "5347" or text, such as "Inventory consists of finished goods and work-in-progress" or even a paragraph or so of narratives.
• **Context**: The context explains important information about the values. You need to understand what entity the value relates to, what period the values relate to, and if the values are actual, budgeted, and so on. For example, you want to be able to say that the information relates to your company and not some other company, and that the period is for 2009, not 2008.

• **Concepts**: By concepts, we mean technical representations of business terms. For example, "Net Income (Loss)" and "Sales, Net" from Figure 1-2 are business terms. These business terms are associated with the text or numbers contained on a business report, the values. You can represent these business terms as technical structures and give them unique names, such as "NetIncomeOrLoss" or "SalesNet." You don't want confuse one concept with another; the unique names help to differentiate concepts and the associated business term. The concepts are basically a controlled vocabulary of precisely defined business terms. These can be financial reporting terms, accounting terms, or even nonfinancial terms; they really can be any terms, but they'll likely be business terms of some sort. Values (like "5347" in the example) are reported for concepts and are reported within a specific context.

• **Dictionary**: Concepts are expressed within a dictionary. In XBRL, these dictionaries are referred to as taxonomies, but we want to use the more comfortable term, dictionary, for a moment. The dictionary doesn't necessarily define the concepts, but it does either define them or point to the definition or provide a definition in some manner. The important thing here is that the dictionary is the central location where concepts are pointed to information that defines that concept. The dictionary gives a precise definition about the meaning of each term (semantics), including references and examples. Other information helpful in making use of the concept is also provided, such as labels in any number of languages, relations of a concept to other concepts, and such. For example, a dictionary may contain the concept "NetIncomeOrLoss" or "SalesNet," express that the concepts have labels of "Net Income (Loss)" and "Sales, Net," respectively, and communicate the specific ways the concept relates to other concepts in the dictionary such as "SalesGross," "Taxes," and "Expenses."

**NOTE**

You may hear what we have referred to as a "dictionary" above referred to as a "taxonomy" or "XBRL taxonomy" or maybe sometimes even "schema." For this initial explanation of XBRL, we will stick with "dictionary" a little longer allowing you can become comfortable with this new term. Throughout the rest of the book, we will use the term XBRL taxonomy.

Does this discussion sound familiar? Sure, you do work with these ideas every day, even though you may not think about it in this way. But all this XBRL stuff is not for the benefit of humans, at least not directly, but rather for the benefit of computers, to allow them to communicate with each other. What a computer needs to achieve effective communication is provided by the structure within the XBRL instance and XBRL taxonomy so that the computer can figure out what is a value, what is a concept, what is a context, and such. This structure is achieved by using the XML syntax, creating something many people refer to as a tag.

1.5.1. Tag — You're it: Tags add structure

Within the XBRL instance, the business information, or the value, is expressed in the form of what is often referred to as tags. Tags are the names of concepts defined in the dictionary, called an XBRL taxonomy. Each value has a specific tag, and that tag connects to the concept and its definition and all the other information contained within the dictionary. For example, one tag may be "Net Income (Loss)," while another tag may be "Assets."

Tags are used in many places. XBRL instances and XBRL taxonomies are collections of these tags. A tag's fundamental function is to add structure that enables computers to understand the pieces of an XBRL instance and XBRL taxonomy. People can still understand and work with this information. People don't work with the information at the tag level, but because of the tags, computers can work with the information and help people do all sorts of new, interesting, and helpful tasks.

Although you probably won't work at the level of the tags, understanding what tags are and how they work is helpful in understanding how the tags, and the structure they provide, enable computers to achieve this understanding. Tags look like this within the XBRL instance:

```
<gaap:NetIncomeOrLoss
  contextRef="Period-2009"
  unitRef="US-Dollars"
  decimals="INF">5347000</gaap:NetIncomeOrLoss>
```
The preceding code expresses the value 5347000 as being for the concept `gaap:NetIncomeOrLoss`. The other tags help explain the context of the information.

Concepts used within the XBRL instance are specified within the dictionary in the form of other tags, or elements, and look like this within the dictionary. (Keep in mind that the dictionary is referred to as an XBRL taxonomy.)

```xml
<xs:element
    name="NetIncomeOrLoss "
    type="xbrli:monetaryItemType"
    substitutionGroup="xbrli:item"
    xbrli:periodType="duration"
    xbrli:balance="credit">
```

The preceding code specifies a term as a tag within a XBRL taxonomy, which is then used within the XBRL instance to express a value. In our example, the term Net Income (Loss) is specified in the dictionary as the element "NetIncomeOrLoss". The definitions of terms specified come from accounting rules, regulations, laws, international standards, other written specifications, or from whatever governing body (a government, a regulator, a company, and so on) that wants to exchange information in this manner. Definitions may also come from your internal corporate data warehouse information models.

### 1.5.2. Dictionaries can be flexible

The dictionary, expressed as an XBRL taxonomy, isn't included within the business report; it's separate and referenced from the report (XBRL instance). This separation allows dictionaries to be shared by multiple reports. The dictionary may live on the Web, or it may live only within a company's intranet, but it has to be in a location where all the people and software that make use of the report can find it.

An XBRL instance is always connected with an XBRL taxonomy, the dictionary of what is contained within that XBRL instance. If your business information includes concepts not within the XBRL taxonomy, you can add your own concepts by using a formal process. Software can then use the custom information you add because the customization is prescriptive, meaning there is a prescribed, and therefore predictable, way these new concepts are added. Adding concepts to an XBRL taxonomy is called extension. You don't have to use this extension feature, but it's available if you need it.

**NOTE**

XBRL doesn't itself define an XBRL taxonomy, which serves as the dictionary everyone must use; rather, different areas of business (called domains) usually create them. If a domain has created a dictionary that you like or that you're mandated to use, you can use that dictionary. You may even use multiple dictionaries. Or, if you don't find a dictionary that fits your needs, you can create your own dictionary. You can even modify the dictionaries of others, if the system you're using allows for these types of modifications.

If, say, the accountant (CFO, bookkeeper, controller) of a company has added new concepts to the dictionary, the accountant simply creates his own new dictionary and links it to the existing accepted dictionaries. This ability to extend the dictionary for each report and fit those new terms into the existing dictionary is one of the unique aspects of XBRL. For example, if your organization is in a specialized industry such as airlines or shipping, your company can add its unique subcategories of properties, plants, and equipment that may not exist within a general list of such assets.

You may wonder, "Well, if everyone adds their own unique stuff, then how do you understand others companies unique concepts?" The answer to this question is threefold:

- **First**, the concepts are defined in the extended dictionary provided so that you'll understand what the concepts are.

- **Second**, the extended concepts are clearly highlighted by the extension itself. Humans need to be involved in this part of the process, and this is where they should be involved, focusing on the unique aspects of a company, not rekeying all the information.

- **Third**, specialized industries and other groups will get together and agree on concepts specific to their industry or group. Over time, more and more concepts make their way to the public dictionaries and fewer and fewer extensions are needed. This continues to push human focus to the unique areas, allowing computers to help out with the agreed-upon, standardized areas of a business information exchange.
1.5.3. Dictionaries can enforce rules

The dictionary is actually more than an alphabetical list of terms. The dictionary can also specify rules and relations between concepts, and you can even include additional information about a concept. As we describe in Chapter 17, this is why a dictionary may not be a dictionary at all, but rather something called a taxonomy. You can go even further and create what is called an ontology. (See Chapter 17 for an explanation of the differences between dictionaries, taxonomies, and ontologies.)

The dictionary with a hierarchy, which is commonly referred to as a taxonomy, is commonly presented as a tree structure within software applications, looking much like the outline of a book. This setup helps dictionary creators categorize concepts. Categories can have subcategories that show relationships between concepts. Concepts can have many different relations, and the relations can be of many different types. For example, the category "Current Assets" may contain subcategories, such as "Cash," "Receivables," "Inventories," and so on.

An XBRL taxonomy can specify rules. For example, the XBRL taxonomy can specify that "Current Assets" is equal to the sum of "Cash," "Receivables," "Inventories," and all the other concepts defined as a component of "Current Assets." Other types of rules it can specify are if-then type rules. For example, if "Property, Plant, and Equipment" existed within the report, you'd expect that related concepts that express the depreciation method, asset life, categories of assets, and other policies and disclosures would likewise be in the report (if the report is a financial statement). Specifying rules not only helps to verify that the report is correct, but it also helps in the process of creating the report. Literally, the XBRL taxonomy can help guide you through the process of creating the report. It also helps those who specify what information the report creator must provide (such as regulators) in the report and do so with clarity. This formal process enables a computer to understand the report and dictionary and helps minimize errors, omissions, and miscommunications. This formal process allows for both people and computers to better work with these reports and the processes used to create the reports.

When predefined XBRL taxonomies are used, the tags in the reports are consistent. If the tags in the reports are consistent (as opposed to every organization creating their own XBRL taxonomy), the report's consistent structure greatly assists users in the process of comparing the information, if they choose to do so. Fundamentally, users can spend more time on the actual analysis and less time figuring out what data is comparable.

1.5.4. Users can change report organization

In XBRL, the creator of a report, such as a financial statement, tags it. These tags add structure, which helps computers understand and do things with the information within the report. The report includes all the numbers and narrative text, individual text, and any other values within the report. The creator uses an XBRL taxonomy, either one they pick or one they're required to use by a third party.

If someone using the report (or XBRL instance) doesn't like the way the creator organized the report, the user of the report can simply reorganize the report by creating his own relations and perhaps even his own concepts within an extension XBRL taxonomy. For example, you can compute EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortization) in many different ways. Analysts, or even creators of the reports, can combine concepts that add up to totally new concepts the user may choose to create. Or, analysts can move numbers, policies, and detailed disclosures together to help with their analysis. Hiding information is a thing of the past. This ability to reorganize a report is achieved by using the structure provided by the tags.

In other words, if all companies in a given industry use the same XBRL taxonomy for creating their reports, these reports are basically a little database of reported information that anyone can easily use to perform comparisons or do other types of analysis. Users have more time available for doing the analysis because they don't need to spend as much time rekeying or mapping information. The tag structure provided by the report creator makes this time savings possible.

Further, the tags also provide efficiencies for the report creators. Report creators use those same tags to allow computers to check the report to ensure that everything adds up, the correct information is included, and so on. The XBRL taxonomy sets the verification rules, which are also available to the report users. These verification rules enable the automation of the information exchange process.

All these things working together — the tags, the dictionaries, the rules, the contexts, and so on — enable the automated exchange of business information across business systems. This arrangement sounds complex, and it is. Add to this complexity the flexibility that you have to add concepts and change relationships, and it becomes even more complex. The needs of business information exchange are why businesses use software to simplify the process.
1.5.5. XBRL processors "get" XBRL

You can create XBRL instances and XBRL taxonomies by hand or even by using rather simple macros. You can use an XML parser (application designed to work with XML documents) to read and create XBRL information. After all, XBRL is just XML.

Sometimes you may want to do all this creating by hand, but generally you won't. Enter a special piece of software called an XBRL processor. This handy tool understands the logical and the physical models of XBRL and how all the pieces fit together, and they can help you make sure that everything is correct, including the rules that make sure that the values in the XBRL instance (report) follow the rules specified in the XBRL taxonomy (dictionary).

And guess what? You can find many open source XBRL processors, free XBRL processors, and commercial XBRL processors. (Chapter 14 points you to these and other handy software.)

Computers can read (meaning import or export information) XBRL instances and XBRL taxonomies easily because all that they need to do so is contained in those files. If a human needs to read them, no problem: Apply a style sheet (information that helps a computer understand how to present the information for humans to read), use an XBRL viewer-type application, or simply import the information into your favorite brand of spreadsheet. You're not locked into any specific application or even any specific style sheet. Have it your way! The same computer-readable dataset makes the information flexible. And any viewer makes the entire dictionary available to you so that you can understand all the concepts, relations, rules, and so on from which the information in the report follows.

Many organizations can, and do, simply use Microsoft Excel spreadsheets to create their reports, cobbling together information from various business systems into some sort of business report. Others use specialized report writer software. Currently, these last-mile processes of financial reporting or other business reporting tend to be highly manual in most organizations. These processes will eventually leverage XBRL to streamline business report creation. XBRL will also make reusing reported information significantly easier.