



U.S. GAAP Financial Reporting Taxonomy

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Technical Guide

Version 2016

This version of the Technical Guide accompanies the formal release of the 2016 U.S. GAAP Financial Reporting Taxonomy (Taxonomy) by the Financial Accounting Standards Board

An electronic copy of this Technical Guide is available on the FASB's website.

Financial Accounting Standards Board

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1 Introduction

The purpose of this document is to provide technical details of the 2016 GAAP Financial Reporting Taxonomy (Taxonomy). The intended audience for this document is a technical user familiar with XBRL, other specifications, and modules of XBRL, XML Schema, XSLT stylesheets, and so forth. It is not intended as a tutorial or as an implementation guide for the Securities and Exchange Commission (SEC) filers. Business users may be interested in this document and it is written such that a business user familiar with the technologies (XBRL, XML Schema, XSLT, and so forth) will be comfortable with this document. Users looking for guidance to conform to SEC XBRL filing requirements should look to the SEC EDGAR Filer Manual and other information provided on the SEC website.

Terminology used in XBRL frequently overlaps with terminology from other fields.

Term	Meaning
arcroleRef, child, concept, context, duplicate item, descendant, DTS, duplicate tuple, element, entity, fact, footnote, instance, item, linkbase, linkbaseRef, period, roleRef, schemaRef, taxonomy, taxonomy schema, tuple, unit	As defined in [XBRL]
DTS Component	A discoverable taxonomy set (DTS) contains taxonomy schemas and linkbases. The bounds of a DTS are such that <i>DTS Components</i> include all taxonomy schemas and linkbases that can be discovered by following links or references in the taxonomy schemas and linkbases included in the DTS.
MUST, MUST NOT, REQUIRED, SHALL, SHALL NOT, SHOULD, SHOULD NOT, MAY, OPTIONAL	See [RFC2119] for definitions of these and other terms. In particular, these include: SHOULD Conforming documents and applications are encouraged to behave as described. MUST Conforming documents and consuming applications are required to behave as described; otherwise, they are in error.
FAF, FASB	Financial Accounting Foundation, Financial Accounting Standards Board
Financial report	A document containing quantitative and textual information that is either: (a) meant to satisfy authoritative financial reporting standards and generally accepted accounting principles (GAAP) or a regulatory report whose subject matter is primarily financial position and performance and related explanatory disclosures or (b) a data set used in the collection of financial statistics. This term excludes transaction or journal-level reporting and primarily narrative or nonfinancial quantitative reports.
GAAP or U.S. GAAP	Generally accepted accounting principles: Term used to describe broadly the body of principles and practices that govern the accounting for financial transactions in the preparation of a set of financial statements.
IASB	International Accounting Standards Board
IFRS	International Financial Reporting Standards
PCAOB	Public Company Accounting Oversight Board
XBRL	Extensible Business Reporting Language (XBRL) 2.1 Recommendation [XBRL].
SEC	U.S. Securities and Exchange Commission

2 Physical Location and Organization

The taxonomies are rooted at URLs of the form <http://xbrl.fasb.org/{name}/{version}/> and the current taxonomies are specifically at the base URL:

<http://xbrl.fasb.org/us-gaap/2016/>

A zip file containing all files is located at:

<http://xbrl.fasb.org/us-gaap/2016/us-gaap-2016-01-31.zip>

There are dozens of entry points for different purposes. Each entry point selects some subset of the hundreds of files constituting all taxonomies.

2.1 Naming Conventions

Figure 1. Directories for Entry Point Shemas

dis	disclosures
elts	elements
stm	statements
entire	entry point for entire Taxonomy

Figure 2. Abbreviations Used in File Names

-all-	contains labels, relationships with information about deprecation, and documentation and references for concepts
-std-	loads the Taxonomy with labels but no documentation or references
-dep-	contains labels and relationships with information about deprecation
-chg-	contains labels and relationships with information about changes and taxonomy implementation labels and notes.

Figure 3. Entry Point Types

-dis-	a disclosure schema or linkbase
-ent-	a document schema entry point
-stm-	a statement schema or linkbase
-entryPoint-	the root of the entire taxonomy

Figure 4. Statement Type Abbreviations

-com-	common	contains definitions and other relationships whose only purpose is to be copied by users into other links
-scf-	statement of cash flows	
-scp-	statement of partner capital	
-sfp-	statement of financial position	also known as a balance sheet
-she-	statement of shareholder equity	
-soc-	statement of comprehensive income	
-soi-	statement of income	

Figure 5. Industry Abbreviations

-basi-	banking and savings
-bd-	broker-dealer
-ci-	commercial and industrial
-ins-	insurance
-re-	real estate

Figure 6. Prefixes for the Main file Groups

Prefix	Meaning—FASB Taxonomy
us-gaap-	U.S. GAAP Taxonomy prefix

Figure 7. Linkbase Naming Abbreviations

-cal-	calculation
-def-	definition
-doc-	documentation (contains XBRL labels having roles other than “label”)
-lab-	labels (contains labels having standard role "label" and others)
-pre-	presentation
-ref-	reference
-dep-	deprecation (contains relationships among deprecated and normal concepts)
-chg-	changes (contains labels having roles identified as changeLabel201x)
-tin-ref-	Taxonomy implementation notes using reference syntax
-tin-def-	Taxonomy implementation note relationships in definition linkbase using http://fasb.org/arcrole/alt-concept-supersededConceptForPeriodOfAndAfterAdoption to associate an alternative concept for a superseded concept for period of and after adoption

2.2 The Base Schema *us-gaap-2016-01-31.xsd*

All concepts in the Taxonomy are contained in a single schema file as detailed by type in Figure 8. This is done for reasons explained in the architecture document and are summarized here:

- Preparers need access to the full set of available concepts when searching for a concept so that they do not unnecessarily extend the Taxonomy.
- Linkages between statements, statements and disclosures, and among disclosures are sufficiently dense that naïve strategies based on, for example, industry concepts or concepts in different statements, wind up loading everything anyway.
- The minimum multimegabyte load of this schema is normally quite fast relative to the processing involved in validating an equivalent set of calculation, definition, or presentation relationships.

Figure 8. Element Type Breakdown

<u>Type</u>	<u>2015 Taxonomy</u>	<u>New</u>	<u>Deprecated</u>	<u>2016 Update</u>
xbrli:monetaryItemType	7,075	88	323	6,840
xbrli:stringItemType	1,375	12	169	1,218
nonnum:domainItemType	1,639	49	8	1,680
nonnum:textBlockItemType	960	4	25	939
num:percentItemType	428	16	47	397
xbrldt:dimensionItem	264	3	10	257
xbrli:sharesItemType	222	2	1	223
num:perShareItemType	160	0	1	159
xbrli:dateItemType	102	3	0	105
xbrli:integerItemType	102	2	2	102
Other Data Types	292	6	2	296
Elements Available for “Tagging”	12,619	185	588	12,216
Organizational Abstracts (xbrli:stringItemType)	2,922	30	93	2,859
Subtotal	15,541	215	681	15,075
		Deleted¹		
Deprecated	1,573	681	955	1,299
Total Elements in Taxonomy Schema	17,114			16,374

2.3 References and the Reference Linkbase

References to the authoritative accounting literature (the *FASB Accounting Standards Codification*[®]) appear for concepts derived from U.S. GAAP. References previously identified as superseded or redundant have been removed from the 2016 Taxonomy.

The file *us-gaap-ref-2016-01-31.xml* contains a legal XLink construct that has not commonly been leveraged in XBRL taxonomies. There is only a single reference resource element for each distinct reference so that if several concepts share a literature reference, they each have an arc pointing to the common resource. This saves about 40% on the size of that one file. Therefore, when editing the Taxonomy, users will need to have the choice of editing the reference (and thereby affecting all concepts that use it) or editing a copy of it (thus affecting just a single concept).

¹ Deleted 2013 Taxonomy deprecated elements per EDGAR Release 14.1

Reference resources do not have id attributes. Therefore, the arc between the concept and its references cannot be prohibited by any extension linkbase.

2.4 Documentation and the Documentation Linkbase

The file us-gaap-doc-2016-01-31.xml and other documentation label files contain label resources with the "documentation" role and concept-label arcs for most of the concepts. Labels and documentation linkbases are NOT referenced from the base schema (us-gaap-2016-01-31.xsd) so users have the option whether or not to load this linkbase. Documentation label resources do not have id attributes. Therefore, the arc between the concept and its documentation cannot be prohibited by any extension linkbase.

Figure 9. DELETED

2.5 Labels and the Label Linkbase

File us-gaap-lab-2016-01-31.xml contains the "standard" labels for all concepts in the base schema us-gaap-2016-01-31.xsd.

Standard label resource elements have id attributes. Therefore, the arc between the concept and its standard label may be prohibited by any extension linkbase.

A standard label with a bracketed suffix completely determines the type, substitution group, period, and whether a concept is abstract. All abstract concepts must have one of these bracketed suffixes.

Figure 10. Mandatory Relationship of Standard Label Suffix to Concept Type

Suffix	Type	Substitution Group	Abstract	Period
[Abstract]	xbrli:stringItemType	xbrli:item	Abstract	duration
[Domain]	nonnum:domainItemType	xbrli:item	Abstract	duration
[Member]	nonnum:domainItemType	xbrli:item	Abstract	duration
[Line Items]	xbrli:stringItemType	xbrli:item	Abstract	duration
[Table]	xbrli:stringItemType	xbrldt:hypercubeItem	Abstract	duration
[Axis]	xbrli:stringItemType	xbrldt:dimensionItem	Abstract	duration
[Roll Forward]	xbrli:stringItemType	xbrli:item	Abstract	duration
[Text Block]	nonnum:textBlockItemType	Xbrli:item		duration
[Policy Text Block]	nonnum:textBlockItemType	Xbrli:item		duration
[Table Text Block]	nonnum:textBlockItemType	Xbrli:item		duration

2.5.1 Legacy Element Names

Experience shows that stability of the element name and its meaning is essential for preparers throughout their tagging and verification processes and when rolling forward tagging from period to period.

Generally, an element name introduced in a Taxonomy Update will always have the same properties (data type, substitution group, abstract attribute, period type attribute, and balance attribute) in future Updates.

2.5.2 Standard and Documentation Labels

The standard label is generally stable but may change in minor ways from Taxonomy Update to Update, such as to improve understanding and consistency or to correct typos.

Likewise, the documentation and references may change but only in ways that have been verified as semantically equivalent by the FASB staff.

2.5.3 Standard and Preferred Label with Filer Count

The 2016 Taxonomy as displayed in the FASB Taxonomy Online Review and Comment System (TORCS) contains numerical values appended to the Standard and Preferred Labels, which represent the usage of the element for all SEC filings from January 1, 2014 through July 31, 2015 after removing duplicates for each filer. For example, the element for Revenues appears as "Revenues {4770}," which means that 4,770 filers have used the element in their filings from January 1, 2014 through July 31, 2015. These filer counts are provided for informational purposes only and are not intended to promote or limit use of elements. Elements may have low counts for multiple reasons because they are transactional in nature (for example, dispositions and acquisitions) or are a reflection of the current economic environment (for example, impairments).

These counts will only appear in the Taxonomy as viewed in TORCS and supporting collateral. They are not available in the Taxonomy published at <http://xbrl.fasb.org/us-gaap/2016/>.

2.5.4 Negating Labels

The Taxonomy uses no Negating Labels in any label linkbase. Negating Labels allow customization of a presentation to give the preparer detailed control.

2.5.5 Change Label

The file `us-gaap-chg-2016-01-31.xml` contains label resources with the "changeLabel201x" roles and concept-label arcs for concepts with changes as listed below. The Change Label linkbase is NOT referenced from the base schema (`us-gaap-2016-01-31.xsd`) so users have the option whether or not to load this linkbase. Change Label resources do not have id attributes. Therefore, the arc between the concept and its documentation cannot be prohibited by any extension linkbase.

The 2016 Taxonomy includes Change Labels that highlight the latest date (YYYY-MM) that a concept and any of its various attributes have been modified and what was changed or added since the 2014 Taxonomy. The following are the types of changes documented in the label since the 2014 Update:

- New Element
- Modified References
- Modified Documentation Label (originally read as follows: "Insert original definition")
- Modified Standard, Period Start, Period End, or Total Labels
- Element Deprecated
- Modified Data Type
- Modified Period Type
- Modified Deprecated Label (used when only the Deprecated Label is modified)
- Element Undeprecated
- Modified Balance Attribute
- Modified Axis Default Label
- Clarification (added with the 2015 Taxonomy)

The Clarification attribute was added with the 2015 Taxonomy to provide additional explanation where warranted and to highlight changes that should require careful scrutiny by preparers.

The Change Label is structured to make it easier for software applications to parse the content according to the software requirements and efficiently highlight the change for their users.

For example, a Change Label that includes a few of the above attributes might look like this:

[2014-08] {Modified Standard, Period Start, Period End, or Total Labels}{Modified Documentation Label. Originally read as follows: Amount after allocation of valuation allowances of deferred tax asset attributable to deductible temporary differences and carryforwards, net of deferred tax liability attributable to taxable temporary differences.}
 {Clarification: The definition of this element has been significantly revised to clarify its intended purpose for amounts representing measurement before jurisdictional netting. This change may require reconsideration of its use. Possible alternative element for amounts after jurisdictional netting may be DeferredIncomeTaxAssetsNet.}

A new Change Label role is added with each Update to identify and distinguish each year's changes. Starting with the 2016 Taxonomy, the 2012 and 2013 Change Labels have been removed. Going forward, Change Labels will be limited to the last three Updates as being most relevant. Additionally, the Change Label role corresponding to the deleted deprecated elements is removed. The 2016 Taxonomy includes the following roles:

```
<link:roleType id='changeLabel2014' roleURI='http://fasb.org/us-gaap/role/label/changeLabel2014'>
<link:definition>Change Label 2014</link:definition>
<link:usedOn>link:label</link:usedOn>
</link:roleType>

<link:roleType id='changeLabel2015' roleURI='http://fasb.org/us-gaap/role/label/changeLabel2015'>
<link:definition>Change Label 2015</link:definition>
<link:usedOn>link:label</link:usedOn>
</link:roleType>

<link:roleType id='changeLabel2016' roleURI='http://fasb.org/us-gaap/role/label/changeLabel2016'>
<link:definition>Change Label 2016</link:definition>
<link:usedOn>link:label</link:usedOn>
```

2.5.6 Taxonomy Implementation Note

The 2016 Taxonomy includes Taxonomy Implementation Notes (TIN) associated with concepts to assist in appropriate selection and usage of the reference linkbase syntax as provided by the XBRL specification for associating structured information with taxonomy concepts. As such, it can be readily understood and accommodated by XBRL developers and XBRL applications. The TIN structure is explicit and attributes as reference parts are separated from values. The reference parts are defined in the Taxonomy (us-parts-tin-2016-01-31.xsd).

The TINs are expressed using reference parts as illustrated below.

Category	Reference Part	Taxonomy Reference Part Documentation	Requirement
Publish Date	PublishDate	Publish date for Taxonomy Implementation Note in [YYYY-MM] format	Required
Source	Source	Source for Taxonomy Implementation Note. Examples include: Taxonomy Implementation Guide [TIG]; Accounting Standards Update [ASU]	Required
Source Name	SourceName	Source name, example: Subsequent Events	Required
Source Version	SourceVersion	Source version	Required when TIG exists
Positive XBRL Value	Positive_XBRL_Value	XBRL value to be entered as positive, when reported amount is present; examples include facts reported as [Gain] [Increase] [Accumulated Earnings].	Required for 2-way elements only
Negative XBRL Value	Negative_XBRL_Value	XBRL value to be entered as negative, when reported amount is present; examples include facts reported as [Loss] [Decrease] [Accumulated Deficit].	Required for 2-way elements only
Taxonomy Implementation Note	Note	Taxonomy implementation note.	Required
Link to Taxonomy Implementation Guide on FASB's website	URI	URI link to Taxonomy Implementation Guide.	Required when TIG exists

Potential alternate element(s)	AlternateElement	Potential alternate element name(s).	Optional. If several elements are presented, two Taxonomy Implementation Notes should be created.
Potential alternate element(s) for periods of and after adoption	AlternateElementForPeriodOfAndAfterAdoption	Potential alternate element names(s) for period of and after adoption.	Optional. If several elements are presented, two Taxonomy Implementation Notes should be created.
Potential alternate element(s) for periods prior to adoption	AlternateElementForPeriodsPriorToAdoption	Potential alternate element names(s) for periods prior to adoption.	Optional. If several elements are presented, two Taxonomy Implementation Notes should be created.
Transition options for new ASU	TransitionOption	Transition options for new ASU. Appropriate values include: [Retrospective] or [Prospective]	Required for transitional elements

An example of a TIN that includes a few of the above attributes:

```
<link:reference xlink:type="resource" xlink:label="ref_59"
  xlink:role="http://fasb.org/us-gaap/role/tin/taxonomyImplementationNote">
  <tin-part:PublishDate>2015-06</tin-part:PublishDate>
  <tin-part:Note>If Accounting Standards Update 2015-01 is adopted and applied prospectively, this element may
    be appropriate for prior periods.</tin-part:Note>
  <tin-part:TransitionOption>Prospective</tin-part:TransitionOption>
  <tin-part:Source>ASU</tin-part:Source>
  <tin-part:SourceName>Extraordinary Items</tin-part:SourceName>
  <tin-part:AlternateElementForPeriodOfAndAfterAdoption>ScheduleOfUnusualOrInfrequentItemsTextBlock
</tin-part:AlternateElementForPeriodOfAndAfterAdoption>
</link:reference>
```

The file us-gaap-tin-ref-2016-01-31.xml contains the TINs and is structured in a similar manner as references to the authoritative literature as described in "References and the Reference Linkbase." In addition to being contained in a separate file, TINs are identified with the "taxonomyImplementationNote" role. References to the authoritative literature use the presentationRef role.

The TIN linkbase is NOT referenced from the base schema (us-gaap-2016-01-31.xsd) so users have the option whether or not to load this linkbase. Reference resources do not have id attributes. Therefore, the arc between the concept and its references cannot be prohibited by any extension linkbase.

Elements with identified possible replacement elements (alternate elements) are included in the definition linkbase with a relationship to the possible replacement element (using arcrole: http://fasb.org/us-gaap/arcrole/alt-concept-supersededConceptForPeriodOfAndAfterAdoption). Addition, modification, or deletion of the TIN is not intended to be identified in Change Labels.

2.5.7 Deprecated Date Label

The 2016 Taxonomy includes Deprecated Date Labels that identifies the effective date of deprecation (YYYY-MM-DD).

2.5.8 Deprecated Label

The Deprecated Label indicates the details of the deprecated element. Specifically, the label will indicate the reason that it was deprecated, the effective date of deprecation, and the new element that should be used, if applicable.

2.6 Calculation, Definition, and Presentation Linkbases

There are hundreds of individual linkbases organized by entry points as described below in Section 3 ("Discoverable Taxonomy Sets"), Section 5 ("Presentation Linkbases for Viewing the Taxonomy"), and Section 6 ("Calculation, Definition, and Presentation Alignment").

3 Discoverable Taxonomy Sets

Developers familiar with XML Schema understand the <import> and <include> elements and xsi:schemaLocation attributes in XML. Close study of the Discoverable Taxonomy Set (DTS) algorithm in the XBRL 2.1 is critical because taxonomies and instances *will not validate* unless an entry point (an XML Schema file with additional details) is processed correctly to collect the DTS. To give you a sense of the issue, note that Version 1.0 of the Taxonomy was 45MB in 509 files with 152 entry points and over 355 linkbases. Interrelationships among these files are illustrated in Figure 11. The directory entire/ contains two entry point schemas for accessing the entire taxonomy.

Figure 11. Schematic of Import and LinkbaseRef Relationships among Files

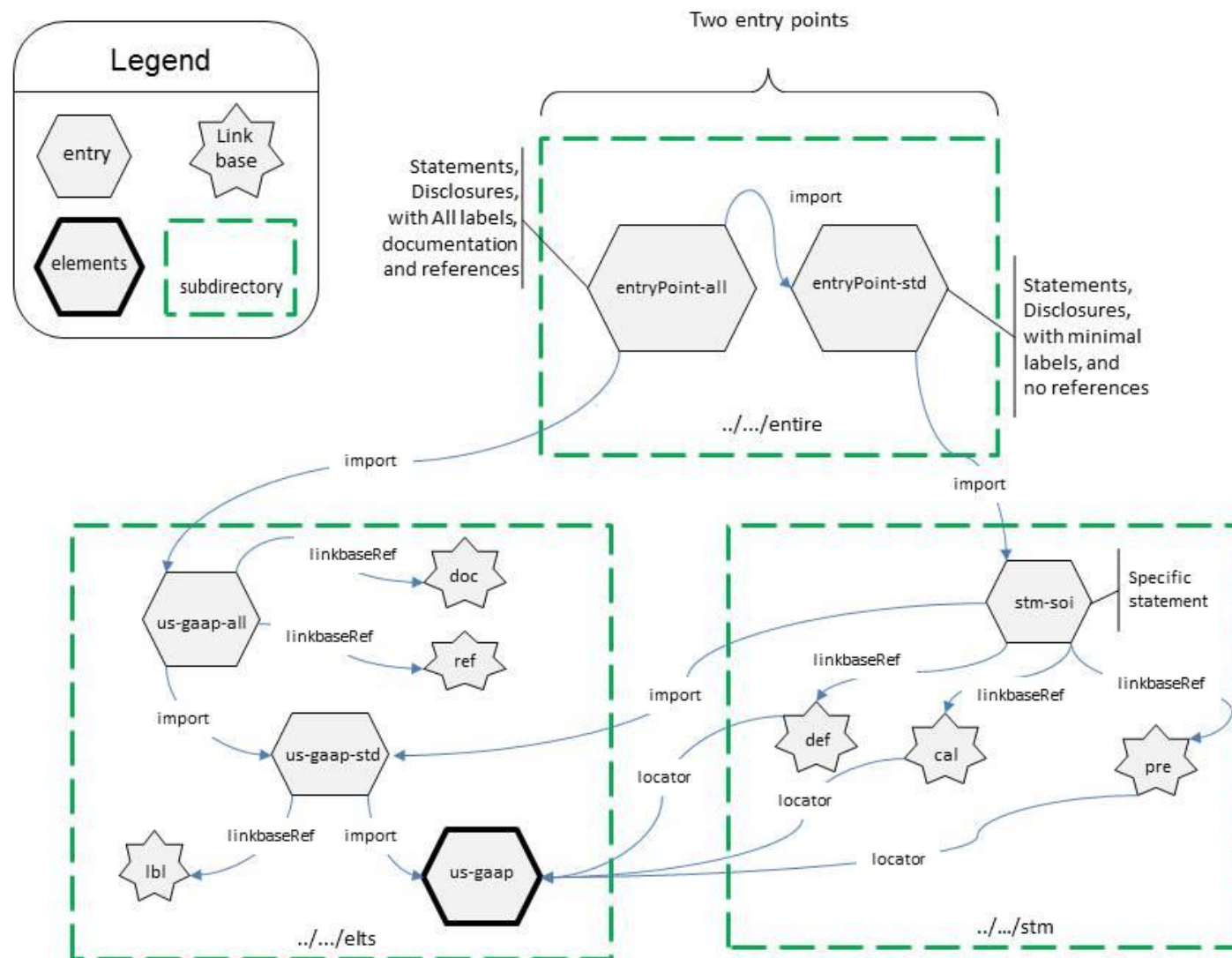


Figure 12. DELETED

The following schemas load all statements and disclosure relationship groups and are useful for navigating the entire Taxonomy.

Figure 13. Entire Taxonomy Entry Points

Us-gaap-entryPoint-std-2016-01-31.xsd	DTS includes all components in all folders except for -doc-, -chg-, and -ref- linkbases.
Us-gaap-entryPoint-all-2016-01-31.xsd	DTS includes all components in all folders.

The morpheme "-all-" means that the entry point causes *all* documentation strings, Change Labels, deprecation information, and references to be loaded. These files are several MB each and while they are essential for preparers and Taxonomy reviewers, it is worth considering for a publisher of instance documents whether an entry point *without* the "all" element should be the target of the instance document's schemaRef.

The morphemes "-stm-" indicates that only the financial statements would be loaded.

Within the directory ./stm are all the statement entry point schemas and their linkbases. A single statement entry point includes all its "alternate calculations."

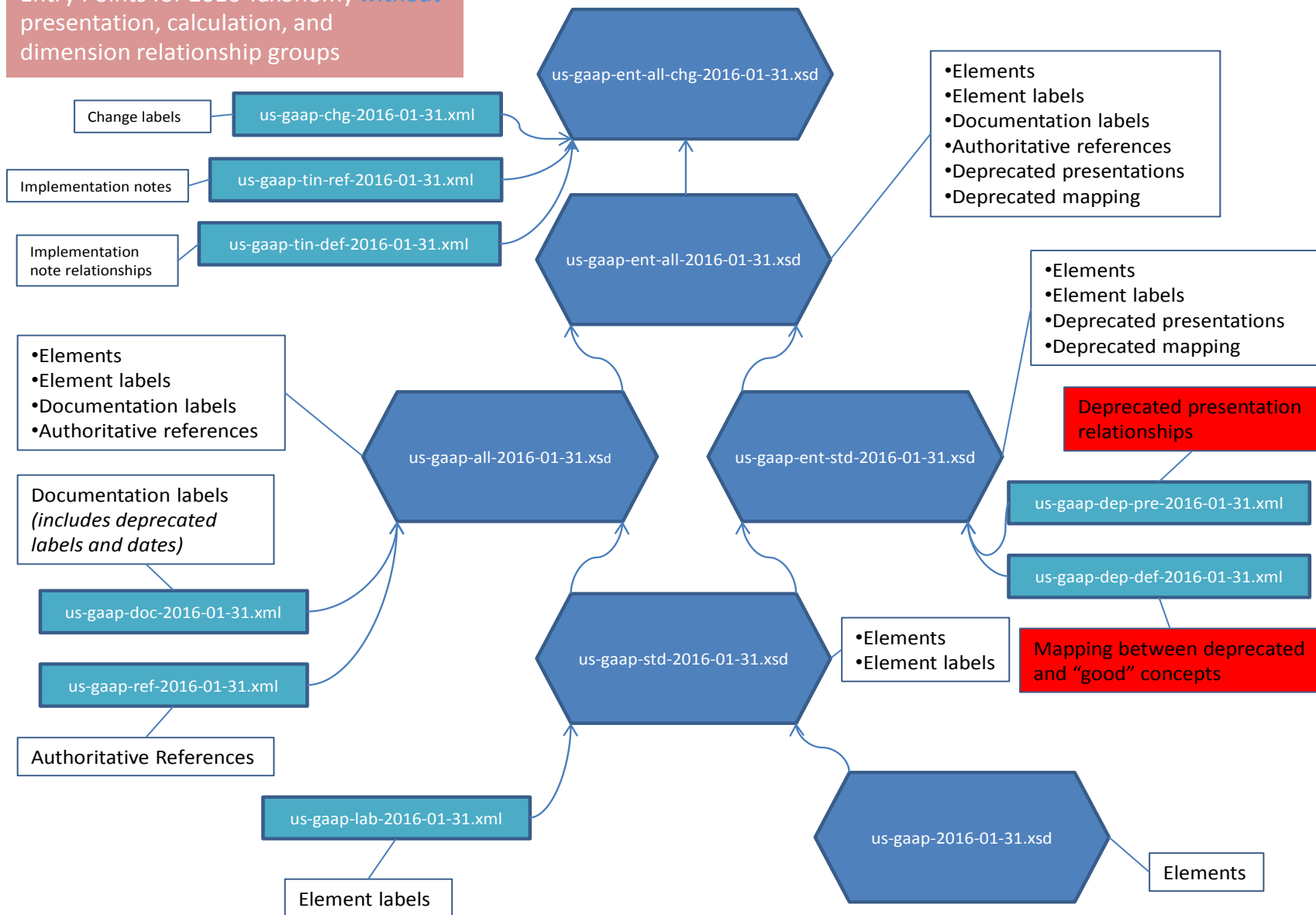
Within the directory ./elts are the schemas referred to by all the linkbases and imported. Figure 14 illustrates what is included with each entry point. When building extension taxonomies, these are the most relevant files to start with as entry points, particularly ./elts/us-gaap-2016-01-31.xsd.

Change Labels and new for 2016 Taxonomy Implementation Notes are in separate files (us-gaap-chg-2016-01-31.xml; us-gaap-tin-ref-2016-01-31.xml) and referenced with the entry point (us-gaap-ent-all-chg-2016-01-31.xsd). This will permit additions to us-gaap-chg-2016-01-31.xml at other than the annual release cycle with no effect on the base Taxonomy. Nonetheless, Taxonomy users that were accustomed to finding Change Labels at entry points us-gaap-all-2016-01-31.xsd or us-gaap-ent-all-2016-01-31.xsd will need to use us-gaap-ent-all-chg-2016-01-31.xsd or create or modify a custom entry point to reference us-gaap-chg-2016-01-31.xml.

For element selection purposes, users are better served using the entire Taxonomy entry point because all they will see is a flat list of thousands of elements without any presentation linkbase.

Figure 14. Primary Entry Points

Entry Points for 2016 Taxonomy *without* presentation, calculation, and dimension relationship groups



4 Namespace Prefixes, Namespace URIs, Absolute and Relative URLs

It is important to be clear about the distinction among these concepts:

- "us-gaap" is a namespace *prefix*.
- "http://fasb.org/us-gaap/2016-01-31" is a *namespace URI*. It is *not* a file location.
- "http://www.xbrl.org/2003/example.xsd" is a URL, the location of a file that contains the definition of a *namespace* and its contents.
- "file://c:/www/xbrl.org/2003/example.xsd" and "ftp://ftp.xbrl.org/example.xml" are *also* each a URL; XBRL applications are not technically limited to "http://" URLs.
- Locators in the Taxonomy are rich with `xlink:href` attributes starting with "../elts/file.xsd". These are relative URLs. Every one of these URLs *must* be interpreted as being relative to the location of the *file in which they appear*. It is critical that software resolves these references correctly.

Maintaining a separate list of user configurable remappings is a useful feature. For example, if you can place a copy of the 2016 Taxonomy on the user's hard drive (say at %homepath%\cache\), then a prefix such as "http://xbrl.fasb.org/us-gaap/2016/" can be remapped to that location for faster access.

However, even after remapping, it is still important to enforce the XBRL 2.1 specification rule that the same namespace cannot be defined in more than one (resolved) location.

5 Presentation Linkbases for Viewing the Taxonomy

The relationships included in the presentation linkbases are organized to roughly correspond to the arrangement of elements in the **order** in which they might be found in a financial statement while other aspects of this presentation, such as nesting, abstract headings, name indicators such as [Table], [Axis], and [Line Items], and other arrangements, are organized to consistently represent the data in a financial statement and to reflect underlying relationships.

The presentation linkbase as it is published does *not* contain enough information for a user to reconstruct the appearance of a financial statement.

Figure 15. Facts in a Sample Statement of Income

	2009
Income Statement [Abstract]	
Revenue [Abstract]	
Sales Revenue, Net [Abstract]	
Sales Revenue, Services, Net [Abstract]	
Electric Utility Revenue [Abstract]	
Electric Bundled Revenue	1,000
Electrical Generation Revenue	2,000
Competitive Energy Revenue	3,000
Electrical Transmission and Distribution Revenue [Abstract]	
Electrical Transmission Revenue	4,000
Electrical Distribution Revenue	5,000
Electrical Transmission and Distribution Revenue	9,000
Electric Utility Revenue	15,000

Figure 15 shows a left-to-right nesting of [Abstract] elements five levels deep. Five or six levels of nesting are not unusual in the statements. This is because the relationships must first and foremost be clear and unambiguous about the presentation context of the individual items. Preparers and their tools are not expected to use this nesting but

rather flatten the presentation by shifting elements to the left to keep with a more conventional presentation. Other visual cues such as the underscore lines (also shown in Figure 15) give the reader the same kind of nesting information. As a general rule of thumb, a person editing the Taxonomy should be able to view a nested presentation and see that the *top-to-bottom order of the nonabstract concepts* is correct.

In summary, the presentation linkbase organization does not represent precisely how a filer would use these elements in its XBRL document but is intended to facilitate Taxonomy navigation and to capture the expected semantics of the elements.

6 Calculation, Definition, and Presentation Alignment

User experience with a taxonomy of this size shows that there must be some default view that packs into it most, if not all, the information needed to understand presentation, definition, and calculation relationships. The Taxonomy uses the presentation linkbase as this main view because this is how most filers think about and work with the financial statements they tag with the Taxonomy concepts.

The calculation relationships separately capture the simple mathematical relationship of concepts expressed in a summation hierarchy; for example, cash, inventory, and so forth that roll up to current assets (on a classified balance sheet) or revenues and expenses that roll up to and net to “Net Income (Loss) Available to Common Stockholders, Diluted.”

The 2014 Taxonomy replaced the presentation-centric calculation hierarchy with a data-centric model, resulting in a simpler and more stable structure with fewer redundant and inconsistent calculation relationships, making it more useful for users and simplifying Taxonomy navigation and element selection for preparers.

As an illustration, the 2013 Taxonomy includes 11 summations for “Earnings Per Share, Basic,” several of which are redundant. The summation count is reduced to two with this revised calculation hierarchy. To further illustrate the point, the 2013 Taxonomy contains 183 separate xml files encapsulating these calculation hierarchies. The 2014 Taxonomy brought that count down to 55.

The dimension relationships are modeled symmetrically to the presentation relationships because they provide additional dimensions to the primary concepts that are further disaggregations. For example, the segment disclosure expresses the disaggregation of primary reported facts such as revenues disaggregated across business units, geography, or some other company selected breakout.

Figure 16. DELETED

7 Deprecated Element Relationships

For a variety of reasons, concepts are deprecated with each version of the Taxonomy, but they remain in the Taxonomy for two annual updates to satisfy legacy and conversion requirements. However, deprecated concepts should not be used beyond their deprecation date in extension taxonomies and instance documents using the Taxonomy version the concept was deprecated in. Deprecated items will be removed when the SEC no longer supports the prior Taxonomy.

NOTE: *With the 2013 Taxonomy, 955 concepts were deprecated and have been removed from the 2016 Taxonomy because they are no longer supported.*

It is useful for XBRL applications to identify for preparers concepts that have been deprecated and appropriate replacements when provided. Deprecated concepts can be identified by their labels and relationships. The labels and relationships provide users and software tools with specific information about why the concept was deprecated and points the user to use alternate concepts when appropriate.

- The Change Label contains the text “Element Deprecated.”
- The Deprecated Date Label includes the effective date of deprecation; for example, 2016-01-31.
- The deprecated date is appended to the element’s standard label.
- The Deprecated Label indicates the details of the deprecated element. Specifically, the label will indicate the reason that it was deprecated, the effective date of deprecation, and the new element that should be used.

In addition to these informational labels, deprecated elements are defined in a definition linkbase relationship to further assist preparers and software vendors. These relationships are contained in <http://xbrl.fasb.org/us-gaap/2016/elts/us-gaap-dep-def-2016-01-31.xml>. All deprecated elements are listed in <http://xbrl.fasb.org/us-gaap/2016/elts/us-gaap-dep-pre-2016-01-31.xml>. These relationships can be accessed with an XBRL compliant application by including linkbaseRef's for these linkbases in a taxonomy schema or by using the entry point <http://xbrl.fasb.org/us-gaap/elts/us-gaap-ent-std-2016-01-31.xsd>. See Figure 14 for an illustration of this entry point.

Deprecated Relationship	Description
No Relationship	No replacement elements exist. Such deprecated items are included in a Deprecated Concepts Group in the presentation linkbase (only) with no ongoing relationship to supported elements.
essence-alias	The essence-alias relationship is a one to one relationship in which a deprecated element has been replaced by an identical concept. Any elements that fall under this relationship also fall under the dep-concept-deprecatedConcept relationship. All deprecated elements with an essence-alias relationship are included in the count of the dep-concept-deprecatedConcept relationship.
dep-aggregateConcept-deprecatedPartConcept	The dep-aggregateConcept-deprecatedPartConcept relationship in the Definition Hierarchy (linkbase) represents multiple concepts that have been deprecated in favor of a single, higher level, and more encompassing concept. For example, if three previously distinct groups of elements such as class of common stock, preferred stock, and convertible preferred stock were combined into a single Dimensional Table, the element that combines and replaces the three elements would be an aggregate concept replacing the three part concepts.
dep-concept-deprecatedConcept	The dep-concept-deprecatedConcept relationship in the Definition Hierarchy (linkbase) represents a one to one relationship. For example, if an "Instant" period type element replaces a "Duration" period type element, then this relationship would be categorized by the dep-concept-deprecatedConcept relationship.
dep-dimensionallyQualifiedConcept-deprecatedConcept	In the case where an element was replaced with a dimensional equivalent (for example, common stock, additional series, or no par value), the deprecated and replacement element is described using the dep-dimensionallyQualifiedConcept-deprecatedConcept relationship. The element that was previously meant to be represented by the deprecated element has been replaced by the interaction between the "new" line item and the dimensionally qualifying Table Member.
dep-mutuallyExclusiveConcept-deprecatedConcept	The dep-mutuallyExclusiveConcept-deprecatedConcept relationship is used when the deprecated element can be represented as two concepts. For example, the 2009 Taxonomy included elements that were meant to represent either the current portion of a concept in a classified balance sheet or the aggregate of the current and noncurrent portion in an unclassified presentation. Such concepts are mutually exclusive for financial data tagging purposes and, therefore, such elements have been deprecated and replaced with separate mutually exclusive concepts. Preparers that previously used such deprecated concepts should only use one of the mutually exclusive replacement concepts; the value previously tagged with the deprecated concept should not be apportioned between the new concepts.
dep-partConcept-deprecatedAggregateConcept	The dep-partConcept-deprecatedAggregateConcept relationship was assigned to deprecated items that were replaced by elements representing greater detail. For example, if "borrowings concepts" was deprecated and replaced with specific concepts representing distinct types of borrowings and the concepts thereof, the dep-partConcept-deprecatedAggregateConcept relationship was assigned.

8 References

- [ARCH] FASB U.S. GAAP Financial Reporting Taxonomy Architecture Version 2015
- [DIM] Ignacio Hernández-Ros, Hugh Wallis
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9 Document History

Document Number		Version	Creation/Issue Date	CR Number
SECOFM-USGAAPT-Technical Guide		Version 1.0	April 28, 2008	0003
Change Record				
Change Number	Description of Change		Change Effective Date	Change Entered By
0001	Created Technical Guide for 1.0 Beta using material previously in the architecture document, "Top ten hints" for Software Team members, and other sources.		2007-12-05	W Hamscher
0002	Update for Release 1.0 Beta 2		2008-02-11	W Hamscher
0003	Finalize for Release 1.0		2008-04-28	W Hamscher
0004	Update for 2011 Public Draft		2010-08-31	W Hamscher
0005	Update for 2011 Public Draft		2010-08-31	L Matherne
0006	Update for 2011 Release		2011-01-31	L Li
0007	Update for 2011 Release		2011-01-31	L Matherne
0008	Update for 2012 Public Draft		2011-08-31	L Li
0009	Update for 2012 Public Draft		2011-08-31	L Matherne
0010	Update for 2012 Release		2011-12-23	L Li
0011	Update for 2012 Release		2011-12-27	L Matherne
0012	Update for 2013 Public Draft		2012-08-28	M Connolly, L Li
0013	Update for 2013 Public Draft		2012-08-29	L Matherne
0014	Update for 2013 Release		2012-12-21	M Connolly, L Li, L Matherne
0015	Edits to conform to the proposed 2014 Taxonomy Update.		2013-08-28	L Matherne
0016	Edits to conform to the 2014 Taxonomy Update.		2013-12-11	L Matherne
0017	Edits to conform to the proposed 2015 Taxonomy Update.		2014-08-28	L Matherne, W Harms
0018	Edits to conform to the 2015 Taxonomy Update.		2014-12-11	L Matherne
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0020	Edits to conform to the 2016 Taxonomy Update.		2015-12-09	L Matherne