

Basics of XBRL-based Digital Financial Reporting¹

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This document helps professional accountants and auditors build on their gentle introduction to XBRL-based digital financial reporting², expanding their knowledge to the next level. In this document we will explain the basics of XBRL-based financial report by representing the accounting equation, SFAC 6 Elements of Financial Statements, and Common Elements of Financial Statements in XBRL. We will then go over what I call a Proof representation to round out you're understanding.

Accounting Equation, the Simplest Financial Report

The double-entry accounting model and the accounting equation provide the very foundation of financial reporting. There are many different sources for the accounting equation, but I will use Wikipedia's version³, of the accounting equation: **Assets = Liabilities + Equity**

As Wikipedia points out, that fundamental accounting equation, also called the balance sheet equation, represents the relationship between the line items assets, liabilities, and equity of an economic entity. It is the foundation for the double-entry bookkeeping system. For each transaction, the total debits equal the total credits.

We can leverage this very simple equation to understand the fundamentals of XBRL-based financial reporting and learn important subtleties and nuances of working with this new digital report format.

We represented this accounting equation in the form of a model which looked something like the following in our gentle introduction to XBRL-based financial reports⁴:

Label	Object Class	Period Type	Balance	Report ElementName
Balance Sheet [Arithmetic]	Abstract			ae:BalanceSheetArithmetic
Assets	Concept (Monetary)	As Of	Debit	ae:Assets
Liabilities	Concept (Monetary)	As Of	Credit	ae:Liabilities
Equity	Concept (Monetary)	As Of	Credit	ae:Equity

¹ *Intermediate XBRL-based Digital Financial Reporting*, <http://xbrl.squarespace.com/journal/2020/12/15/intermediate-xbrl-based-financial-reporting.html>

² *Gentle and Cheap Introduction to XBRL-based Digital Financial Reporting*, <http://xbrl.squarespace.com/journal/2020/12/4/gentle-and-cheap-introduction-to-xbrl-based-digital-financia.html>

³ Wikipedia, Accounting Equation, https://en.wikipedia.org/wiki/Accounting_equation

⁴ Accounting Equation, Very Basic, http://xbrlsite.azurewebsites.net/2020/introduction/ae-basic/ae_ModelStructure.html

As every accountant knows the accounting equation can be represented in another way to make it more appropriate for not for profit entities. That alternative equation is “**Net Assets = Assets - Liabilities**” and when represented in XBRL might look something like the following:

Label	Object Class	Period Type	Balance	Report ElementName
Net Assets [Roll Up]	Abstract			ae:NetAssetsRollUp
Assets	Concept (Monetary)	As Of	Debit	ae:Assets
Liabilities	Concept (Monetary)	As Of	Credit	ae:Liabilities
Net Assets	Concept (Monetary)	As Of	Debit	ae:NetAssets

So, what if you wanted to combine the first representation and the second representation together, how can you achieve that? You have to come up with some term that describes the first set of things and the second set of things.

That term is what we call a **structure**. As we defined the notion of a structure; it is a set of statements that describe the structure.

Here we combine the first set and the second set together and create the structures “Balance sheet” and “Statement of Net Assets” to differentiate the first structure from the second structure⁵ using a name for the structure:

Line	Label	Object Class	Period Type	Balance	Report ElementName
1	01-Balance Sheet	Network			http://www.xbrlsite.com/ae/role/BalanceSheet
2	Balance Sheet [Arithmetic]	Abstract			ae:BalanceSheetArithmetic
3	Assets	Concept (Monetary)	As Of	Debit	ae:Assets
4	Liabilities	Concept (Monetary)	As Of	Credit	ae:Liabilities
5	Equity	Concept (Monetary)	As Of	Credit	ae:Equity
6	02-Statement of Net Assets	Network			http://www.xbrlsite.com/ae/role/StatementOfNetAssets
7	Net Assets [Roll Up]	Abstract			ae:NetAssetsRollUp
8	Assets	Concept (Monetary)	As Of	Debit	ae:Assets
9	Liabilities	Concept (Monetary)	As Of	Credit	ae:Liabilities
10	Net Assets	Concept (Monetary)	As Of	Debit	ae:NetAssets

The statements that describe each of the terms used by each structure and the associations between those terms describe the structure. Do the structures have names? Can they be identified by someone who is looking for each of the structures in a report?

The simple idea of the accounting equation is helpful here to communicate some basic ideas, but we will now move on with a slightly larger financial report structure, the SFAC 6 Elements of Financial Statements, so we can understand a few more moving pieces of an XBRL-based financial report. Again, while SFAC 6 is a simple system it is perfectly capable of getting the important ideas across.

SFAC 6 Elements of Financial Statements

As we pointed out in the introduction SFAC 6 Elements of Financial Statements includes three structures: balance sheet, income statement, and changes in equity⁶:

⁵ Accounting Equation with Net Assets representation, http://xbrlsite.azurewebsites.net/2020/introduction/ae-na/ae_ModelStructure.html

⁶ SFAC 6 Elements of Financial Statements, <http://xbrlsite.azurewebsites.net/2020/master/sfac6/index.html>

Label	Object Class	Period Type	Balance	Report ElementName
01-Balance Sheet	Network			http://www.xbrlsite.com/sfac6/role/BalanceSheet
Balance Sheet [Arithmetic]	Abstract			sfac6:BalanceSheetArithmetic
Assets	Concept (Monetary)	As Of	Debit	sfac6:Assets
Liabilities	Concept (Monetary)	As Of	Credit	sfac6:Liabilities
Equity	Concept (Monetary)	As Of	Credit	sfac6:Equity
02-Comprehensive Income	Network			http://www.xbrlsite.com/sfac6/role/ComprehensiveIncome
Comprehensive Income [Roll Up]	Abstract			sfac6:ComprehensiveIncomeRollUp
Revenues	Concept (Monetary)	For Period	Credit	sfac6:Revenues
(Expenses)	Concept (Monetary)	For Period	Debit	sfac6:Expenses
Gains	Concept (Monetary)	For Period	Credit	sfac6:Gains
(Losses)	Concept (Monetary)	For Period	Debit	sfac6:Losses
Comprehensive Income	Concept (Monetary)	For Period	Credit	sfac6:ComprehensiveIncome
04-Changes in Equity	Network			http://www.xbrlsite.com/sfac6/role/ChangesInEquity
Changes in Equity [Roll Forward]	Abstract			sfac6:ChangesInEquityRollForward
Equity, Beginning Balance	Concept (Monetary)	As Of	Credit	sfac6:Equity
Comprehensive Income	Concept (Monetary)	For Period	Credit	sfac6:ComprehensiveIncome
Investments by Owners	Concept (Monetary)	For Period	Credit	sfac6:InvestmentsByOwners
(Distributions to Owners)	Concept (Monetary)	For Period	Debit	sfac6:DistributionsToOwners
Equity, Ending Balance	Concept (Monetary)	As Of	Credit	sfac6:Equity

So, we have three distinct structures as can be observed above.

However, a close reading of the definitions of the terms that make up SFAC 6, you will recognize that a second approach to representing an income statement is permissible which separates income into two groups: income from normal activities and income from peripheral or incidental activities. This is represented by adding a second income statement structure as can be seen below⁷:

Label	Object Class	Period Type	Balance	Report ElementName
01-Balance Sheet	Network			http://www.xbrlsite.com/sfac6/role/BalanceSheet
Balance Sheet [Arithmetic]	Abstract			sfac6:BalanceSheetArithmetic
Assets	Concept (Monetary)	As Of	Debit	sfac6:Assets
Liabilities	Concept (Monetary)	As Of	Credit	sfac6:Liabilities
Equity	Concept (Monetary)	As Of	Credit	sfac6:Equity
02-Comprehensive Income	Network			http://www.xbrlsite.com/sfac6/role/ComprehensiveIncome
Comprehensive Income [Roll Up]	Abstract			sfac6:ComprehensiveIncomeRollUp
Revenues	Concept (Monetary)	For Period	Credit	sfac6:Revenues
(Expenses)	Concept (Monetary)	For Period	Debit	sfac6:Expenses
Gains	Concept (Monetary)	For Period	Credit	sfac6:Gains
(Losses)	Concept (Monetary)	For Period	Debit	sfac6:Losses
Comprehensive Income	Concept (Monetary)	For Period	Credit	sfac6:ComprehensiveIncome
03-Comprehensive Income 2	Network			http://www.xbrlsite.com/sfac6/role/ComprehensiveIncome2
Comprehensive Income [Roll Up]	Abstract			sfac6:ComprehensiveIncomeRollUp
Income from Normal Activities of Entity	Concept (Monetary)	For Period	Credit	sfac6:IncomeFromNormalActivitiesOfEntity
Income from Peripheral or Incidental Transactions of Entity	Concept (Monetary)	For Period	Credit	sfac6:IncomeFromPeripheralOrIncidentalTransactionsOfEntity
Comprehensive Income	Concept (Monetary)	For Period	Credit	sfac6:ComprehensiveIncome
04-Changes in Equity	Network			http://www.xbrlsite.com/sfac6/role/ChangesInEquity
Changes in Equity [Roll Forward]	Abstract			sfac6:ChangesInEquityRollForward
Equity, Beginning Balance	Concept (Monetary)	As Of	Credit	sfac6:Equity
Comprehensive Income	Concept (Monetary)	For Period	Credit	sfac6:ComprehensiveIncome
Investments by Owners	Concept (Monetary)	For Period	Credit	sfac6:InvestmentsByOwners
(Distributions to Owners)	Concept (Monetary)	For Period	Debit	sfac6:DistributionsToOwners
Equity, Ending Balance	Concept (Monetary)	As Of	Credit	sfac6:Equity

As professional accountants understand, financial reports are not static forms. The conceptual frameworks of both US GAAP and IFRS have the notion of intermediate components which can be different totals and subtotals. In these two income statement examples, the total “Comprehensive Income” is summarized in two different ways. Each of these ways is fundamentally a different income statement format.

⁷ SFAC 6 which adds second income statement, http://xbrlsite.azurewebsites.net/2020/introduction/sfac6-dim/sfac6_ModelStructure.html

And so, above you see two income statements. A careful reading of SFAC 6⁸ makes it clear that each of the concepts Revenues, Expenses, Gains, and Losses could include either from normal activities or peripheral/incidental activities so the two statements are correctly disjointed.

Further, SFAC 6 discusses net assets and therefore it would be very appropriate to add another structure for the notion of a statement of net assets. We will not make that addition here but will do so later to try and keep the examples as small as possible.

We talked about the notion of an XBRL network and how they are used to separate structures because you want to or because you have to in order to avoid conflicts. XBRL has another mechanism for creating structures which is called the hypercube which we will introduce now.

Note that the IFRS Conceptual Framework is similar in their explanation of these dynamics, they simply use slightly different terms⁹. In fact, these dynamics are the same for every financial reporting framework¹⁰.

Common Elements of Financial Report

We want to round out our preliminary discussion of modeling a financial reporting scheme or a financial report using an XBRL taxonomy with the Common Elements of Financial Report representation. This adds only a few additional details to what we have shown in SFAC 6 to get to the four-statement model of a financial report which includes a balance sheet, income statement, cash flow statement, and changes in equity. Here we have added the two additional structures we have mentioned so that we have two balance sheets and two income statements. Here is that representation¹¹:

⁸ FASB, SFAC 6 Elements of Financial Statements, <https://www.fasb.org/pdf/con6.pdf>

⁹ IFRS.ORG, Conceptual Framework of Financial Reporting, <https://www.ifrs.org/issued-standards/list-of-standards/conceptual-framework/>

¹⁰ Comparison of Elements of Financial Statements, <http://xbrlsite.azurewebsites.net/2020/master/ElementsOfFinancialStatements.pdf>

¹¹ Common Elements of Financial Report, http://xbrlsite.azurewebsites.net/2020/intermediate/common/common_ModelStructure.html

#	Report Element Label	Report Element Category	Period Type	Balance Type	Report Element Name
1	01-Balance Sheet	Network			http://www.xbrlsite.com/common/role/BalanceSheet
2	Balance Sheet [Hypercube]	Hypercube			common:BalanceSheetHypercube
3	Balance Sheet [Line Items]	LineItems			common:BalanceSheetLineItems
4	Assets (Roll Up)	Abstract			common:AssetsRollUp
5	Current Assets	Concept (Monetary)	As Of	Debit	common:CurrentAssets
6	Noncurrent Assets	Concept (Monetary)	As Of	Debit	common:NoncurrentAssets
7	Assets	Concept (Monetary)	As Of	Debit	common:Assets
8	Liabilities and Equity (Roll Up)	Abstract			common:LiabilitiesAndEquityRollUp
9	Liabilities (Roll Up)	Abstract			common:LiabilitiesRollUp
10	Current Liabilities	Concept (Monetary)	As Of	Credit	common:CurrentLiabilities
11	Noncurrent Liabilities	Concept (Monetary)	As Of	Credit	common:NoncurrentLiabilities
12	Liabilities	Concept (Monetary)	As Of	Credit	common:Liabilities
13	Equity (Roll Up)	Abstract			common:EquityRollUp
14	Equity Attributable To Controlling Interests	Concept (Monetary)	As Of	Credit	common:EquityAttributableToControllingInterests
15	Equity Attributable To Noncontrolling Interests	Concept (Monetary)	As Of	Credit	common:EquityAttributableToNoncontrollingInterests
16	Equity	Concept (Monetary)	As Of	Credit	common:Equity
17	Liabilities and Equity	Concept (Monetary)	As Of	Credit	common:LiabilitiesAndEquity
18	02-Net Assets	Network			http://www.xbrlsite.com/common/role/NetAssets
19	Net Assets [Hypercube]	Hypercube			common:NetAssetsHypercube
20	Net Assets [Line Items]	LineItems			common:NetAssetsLineItems
21	Net Assets (Roll Up)	Abstract			common:NetAssetsRollUp
22	Assets	Concept (Monetary)	As Of	Debit	common:Assets
23	Liabilities	Concept (Monetary)	As Of	Credit	common:Liabilities
24	Net Assets	Concept (Monetary)	As Of	Debit	common:NetAssets
25	03-Comprehensive Income	Network			http://www.xbrlsite.com/common/role/ComprehensiveIncome
26	Comprehensive Income Statement [Hypercube]	Hypercube			common:ComprehensiveIncomeStatementHypercube
27	Comprehensive Income Statement [Line Items]	LineItems			common:ComprehensiveIncomeStatementLineItems
28	Comprehensive Income (Roll Up)	Abstract			common:ComprehensiveIncomeRollUp
29	Revenues	Concept (Monetary)	For Period	Credit	common:Revenues
30	(Expenses)	Concept (Monetary)	For Period	Debit	common:Expenses
31	Gains	Concept (Monetary)	For Period	Credit	common:Gains
32	(Losses)	Concept (Monetary)	For Period	Debit	common:Losses
33	Comprehensive Income	Concept (Monetary)	For Period	Credit	common:ComprehensiveIncome
34	04-Comprehensive Income 2	Network			http://www.xbrlsite.com/common/role/ComprehensiveIncome2
35	Comprehensive Income Statement [Hypercube]	Hypercube			common:ComprehensiveIncomeStatementHypercube
36	Comprehensive Income Statement [Line Items]	LineItems			common:ComprehensiveIncomeStatementLineItems
37	Comprehensive Income (Roll Up)	Abstract			common:ComprehensiveIncomeRollUp
38	Income from Normal Activities of Entity	Concept (Monetary)	For Period	Credit	common:IncomeFromNormalActivitiesOfEntity
39	Income from Peripheral or Incidental Transactions of Entity	Concept (Monetary)	For Period	Credit	common:IncomeFromPeripheralOrIncidentalTransactionsOfEntity
40	Comprehensive Income	Concept (Monetary)	For Period	Credit	common:ComprehensiveIncome
41	05-Cash Flow	Network			http://www.xbrlsite.com/common/role/CashFlow
42	Cash Flow [Hypercube]	Hypercube			common:CashFlowHypercube
43	Cash Flow [Line Items]	LineItems			common:CashFlowLineItems
44	Net Cash Flow (Roll Up)	Abstract			common:NetCashFlowRollUp
45	Net Cash Flow Operating Activities	Concept (Monetary)	For Period	Debit	common:NetCashFlowOperatingActivities
46	Net Cash Flow Investing Activities	Concept (Monetary)	For Period	Debit	common:NetCashFlowInvestingActivities
47	Net Cash Flow Financing Activities	Concept (Monetary)	For Period	Debit	common:NetCashFlowFinancingActivities
48	Net Cash Flow	Concept (Monetary)	For Period	Debit	common:NetCashFlow
49	Assets Roll Forward (Roll Up)	Abstract			common:AssetsRollForward
50	Assets, Beginning Balance	Concept (Monetary)	As Of	Debit	common:Assets
51	Net Cash Flow	Concept (Monetary)	For Period	Debit	common:NetCashFlow
52	Assets, Ending Balance	Concept (Monetary)	As Of	Debit	common:Assets
53	07-Changes in Equity	Network			http://www.xbrlsite.com/common/role/ChangesInEquity
54	Changes in Equity [Hypercube]	Hypercube			common:ChangesInEquityHypercube
55	Changes in Equity [Line Items]	LineItems			common:ChangesInEquityLineItems
56	Changes in Equity (Roll Forward)	Abstract			common:ChangesInEquityRollForward
57	Equity, Beginning Balance	Concept (Monetary)	As Of	Credit	common:Equity
58	Comprehensive Income	Concept (Monetary)	For Period	Credit	common:ComprehensiveIncome
59	Investments by Owners	Concept (Monetary)	For Period	Credit	common:InvestmentsByOwners
60	(Distributions to Owners)	Concept (Monetary)	For Period	Debit	common:DistributionsToOwners
61	Equity, Endino Balance	Concept (Monetary)	As Of	Credit	common:Equity

There is one specific idiosyncrasy which was included in the representation above in order to make a specific point. Notice that the hypercube “common:ComprehensiveIncomeStatementHypercube” is used to identify two different income statement representations.

Further note that this is not the case for the balance sheet and statement of net assets where different hypercube names were used.

This choice has ramifications for those extracting information from XBRL-based financial reports and want to use hypercubes in order to facilitate comparisons between different financial reports of reporting economic entities. Because each hypercube is not unique, it is impossible to rely only on the hypercube to distinguish one structure from another. As such, you must use both the network and the hypercube to make that distinction.

The Common Elements of Financial Statements representation was specifically referenced to make the point that is communicated in both the SFAC 6 conceptual framework and IFRS conceptual framework

which is the notation of articulation. Articulation is the notion that the primary financial statements are connected together mathematically¹²:

Balance Sheet [Line Items]		Period [Axis]	
		2020-12-31	2019-12-31
Assets [Roll Up]			
Current Assets		500	0
Noncurrent Assets		3,000	0
	Assets	3,500	0
Liabilities and Equity [Roll Up]			
Liabilities [Roll Up]			
Current Liabilities		0	0
Noncurrent Liabilities		0	0
	Liabilities	0	0
Equity [Roll Up]			
Equity Attributable To Controlling Interests		3,000	0
Equity Attributable to Noncontrolling Interests		500	0
	Equity	3,500	0
	Liabilities and Equity	3,500	0

Cash Flow [Line Items]		Period [Axis]	
		2020-01-01 - 2020-12-31	
Net Cash Flow [Roll Up]			
Net Cash Flow Operating Activities		1,500	
Net Cash Flow Investing Activities		1,000	
Net Cash Flow Financing Activities		1,000	
	Net Cash Flow	3,500	
Assets Roll Forward [Roll Up]			
Assets, Beginning Balance		0	
	Net Cash Flow	3,500	
	Assets, Ending Balance	3,500	

Changes in Equity [Line Items]		Period [Axis]	
		2020-01-01 - 2020-12-31	
Changes in Equity [Roll Forward]			
Equity, Beginning Balance		0	
Comprehensive Income		3,000	
Investments by Owners		1,000	
(Distributions to Owners)		(500)	
	Equity, Ending Balance	3,500	

Comprehensive Income Statement [Line Items]		Period [Axis]	
		2020-01-01 - 2020-12-31	
Comprehensive Income [Roll Up]			
Revenues		7,000	
(Expenses)		(3,000)	
Gains		1,000	
(Losses)		(2,000)	
	Comprehensive Income	3,000	

Proof

Up until now, there have been three information patterns that we have worked with: roll ups, roll forwards, and sets. The Proof representation¹³ rounds out the information model representation patterns that you will run across in XBRL-based financial reports. We will explain the additional patterns here.

Every information model within an XBRL-based financial report is fundamentally a set¹⁴ of information. A **set** information pattern has no mathematical associations or other specific characteristics of other information model representations we explain below.

A **roll up** is simply a set but the set of concepts forms some total plus items which aggregate to that roll up total.

A **roll forward** is a set but the set is of an instant concept at two points in time (beginning balance, ending balance) plus a set of changes between those two points in time.

An **adjustment** is a set but the set represents some instant that has been previously reported (i.e. originally stated) and has been restated along with a set of adjustments that reconcile the originally stated and restated values and has the mathematical associations that explain the relationship between all reported facts.

53	06-Prior Period Errors	Network			http://www.xbrlsite.com/proof/role/PriorPeriodErrors
54	Prior Period Errors [Hypercube]	Hypercube			proof:PriorPeriodErrorsHypercube
55	Report Date [Axis]	Dimension			proof:ReportDateAxis
56	Current Report [Member]	Member			proof:CurrentReportMember
57	Prior Report [Member]	Member			proof:PriorReportMember
58	Prior Period Errors [Line Items]	LineItems			proof:PriorPeriodErrorsLineItems
59	Prior Period Errors [Adjustment]	Abstract			proof:PriorPeriodErrorsAdjustment
60	Equity, Originally Stated	Concept (Monetary)	As Of	Credit	proof:Equity
61	Changes in Accounting Policy	Concept (Monetary)	As Of	Credit	proof:ChangesInAccountingPolicy
62	Correction of an Error	Concept (Monetary)	As Of	Credit	proof:CorrectionOfAnError
63	Equity, Restated	Concept (Monetary)	As Of	Credit	proof:Equity

¹² Articulation of Four Statement Model, <http://xbrlsite.azurewebsites.net/2020/core/master-common/ArticulationFourStatementModel.jpg>

¹³ Proof representation, http://xbrlsite.azurewebsites.net/2020/intermediate/proof/proof_ModelStructure.html

¹⁴ Wikipedia, *Set Theory*, https://en.wikipedia.org/wiki/Set_theory

Every adjustment has a mathematical rule which follows the pattern: Restated = Originally stated + Adjustments. Also, note that it is critically important that every adjustment be represented such that it properly intersects with other reported information.

Here is an example of an adjustment from a report which will give you a good idea of what the adjustment information model is trying to accomplish¹⁵:

Prior Period Errors [Line Items]		Report Date [Axis]	Period [Axis]
			2019-12-31
Prior Period Errors [Adjustment]			
Equity, Originally Stated	Prior Report [Member]		2,000
Changes in Accounting Policy	Current Report [Member]		(1,500)
Correction of an Error	Current Report [Member]		(500)
	Equity, Restated	Current Report [Member]	0

A **variance** is a set but the set represents information from two different reporting scenarios plus potentially a variance between the two reporting scenarios.

79	09-Variance Analysis	Network			http://www.xbrlsite.com/proof/role/VarianceAnalysis
80	Variance Analysis [Hypercube]	Hypercube			proof:VarianceAnalysisHypercube
81	Scenario [Axis]	Dimension			proof:ScenarioAxis
82	Actual [Member]	Member			proof:ActualMember
83	Variance [Member]	Member			proof:VarianceMember
84	Budgeted [Member]	Member			proof:BudgetedMember
85	Variance Analysis [Line Items]	LineItems			proof:VarianceAnalysisLineItems
86	Variance Analysis [Roll Up]	Abstract			proof:VarianceAnalysisRollUp
87	Revenues	Concept (Monetary)	For Period	Credit	proof:Revenues
88	(Expenses)	Concept (Monetary)	For Period	Debit	proof:Expenses
89	Gains	Concept (Monetary)	For Period	Credit	proof:Gains
90	(Losses)	Concept (Monetary)	For Period	Debit	proof:Losses
91	Comprehensive Income	Concept (Monetary)	For Period	Credit	proof:ComprehensiveIncome

Every variance has a mathematical rule which follows the pattern: Actual Scenario = Budgeted Scenario + Variance.

Here is an example of a variance from a report which will give you a good idea of what the variance information model is trying to accomplish¹⁶:

¹⁵ Adjustment, http://xbrlsite.azurewebsites.net/2020/intermediate-reports/proof/evidence-package/contents/index.html#Rendering-PriorPeriodErrors-proof_PriorPeriodErrorsHypercube.html

¹⁶ Variance, http://xbrlsite.azurewebsites.net/2020/intermediate-reports/proof/evidence-package/contents/index.html#Rendering-VarianceAnalysis-proof_VarianceAnalysisHypercube.html

Variance Analysis [Line Items]	Period [Axis]		
	2020-01-01 - 2020-12-31		
	Scenario [Axis]		
	Budgeted [Member]	Variance [Member]	Actual [Member]
Variance Analysis [Roll Up]			
Revenues	6,000	1,000	7,000
(Expenses)	(2,000)	(1,000)	(3,000)
Gains	750	250	1,000
(Losses)	(1,000)	(1,000)	(2,000)
Comprehensive Income	3,750	(750)	3,000

Note that a variance could be combined with a Roll Up, Roll Forward, or Set information model to form a complex information model.

A **member aggregation** is a set but the set represents a roll up but the roll up is represented as an aggregation of dimensional members as contrast to a roll up of a set of line items. The semantics of a roll up and member aggregation are identical, it is only the syntax that is different.

92	10-Segment Revenues	Network			http://www.xbrlsite.com/proof/role/SegmentRevenues
93	Segment Revenues [Hypercube]	Hypercube			proof:SegmentRevenuesHypercube
94	Segments [Axis]	Dimension			proof:SegmentsAxis
95	All Segments [Member]	Member			proof:AllSegmentsMember
96	Segment Alpha [Member]	Member			proof:SegmentAlphaMember
97	Segment Bravo [Member]	Member			proof:SegmentBravoMember
98	Segment Charlie [Member]	Member			proof:SegmentCharlieMember
99	Segment Revenues [Line Items]	LineItems			proof:SegmentRevenuesLineItems
100	Sgement Revenues [Set]	Abstract			proof:SegmentRevenuesSet
101	Revenues	Concept (Monetary)	For Period	Credit	proof:Revenues

Every member aggregation has a rule which follows the pattern: Total (Member) = Sum (Members).

Here is an example of a member aggregation from a report which will give you a good idea of what the member aggregation information model is trying to accomplish¹⁷:

Segment Revenues [Line Items]	Period [Axis]			
	2020-01-01 - 2020-12-31			
	Segments [Axis]			
	Segment Alpha [Member]	Segment Bravo [Member]	Segment Charlie [Member]	All Segments [Member]
Sgement Revenues [Set]				
Revenues	1,000	4,000	2,000	7,000

A **text block** (a.k.a. prose) is a set of exactly one concept that has the data type of text block that represents prose for a fact which is generally in the form of escaped XHTML or HTML.

¹⁷ Member aggregation, http://xbrlsite.azurewebsites.net/2020/intermediate-reports/proof/evidence-package/contents/index.html#Rendering-SegmentRevenues-proof_SegmentRevenuesHypercube.html

73	08-Policies	Network			http://www.xbrlsite.com/proof/role/Policies
74	Policies [Hypercube]	Hypercube			proof:PoliciesHypercube
75	Policies [Line Items]	LineItems			proof:PoliciesLineItems
76	Basis of Reporting [Text Block]	Concept (Text Block (HTML))	For Period		proof:BasisOfReportingTextBlock
77	Nature of Operations [Text Block]	Concept (Text Block (HTML))	For Period		proof:NatureOfOperationsTextBlock
78	Revenue Recognition Policy [Text Block]	Concept (Text Block (HTML))	For Period		proof:RevenueRecognitionPolicyTextBlock

Here is an example of a text block from a report which will give you a good idea of what the text block information is trying to accomplish¹⁸:

		Period [Axis]
Policies [Line Items]		2020-01-01 - 2020-12-31
Revenue Recognition Policy [Text Block]	<p>Nature of business</p> <p>Sed mauris. Nulla facilisi. Fusce tristique posuere ipsum. Nulla facilisi. Aliquam viverra risus vitae ante. Sed rhoncus mi in wisi. Nullam nibh dui, molestie vitae, imperdiet non, ornare at, elit.</p> <ul style="list-style-type: none"> • Suspendisse accumsan, arcu vel ornare interdum, magna tellus porta mauris, in porta mi lacus sodales felis. • Phasellus eleifend, diam vitae dapibus pulvinar, erat ligula auctor dui, eget congue justo lorem hendrerit tellus. • Fusce gravida, ligula a placerat placerat, leo erat euismod lectus, et lacinia justo libero non pede. <p>Fusce gravida, ligula a placerat placerat, leo erat euismod lectus, et lacinia justo libero non pede. Vivamus ac velit vel magna nonummy pretium.</p> <ol style="list-style-type: none"> 1. Etiam ut augue 2. Aliquam erat volutpat 	

A **roll forward info** is a set of concepts that provide information about a roll forward but is not in fact a roll forward itself.

102	11-Stock Plan Activity	Network			http://www.xbrlsite.com/proof/role/StockPlanActivity
103	Weighted Average Grant Date Fair Value [Hypercube]	Hypercube			proof:WeightedAverageGrantDateFairValueHypercube
104	Weighted Average Grant Date Fair Value [Line Items]	LineItems			proof:WeightedAverageGrantDateFairValueLineItems
105	Weighted Average Grant Date Fair Value [Roll Forward Info]	Abstract			proof:WeightedAverageGrantDateFairValueRollForwardInfo
106	Nonvested Fair Value, Beginning Balance	Concept (Share)	As Of		proof:NonvestedFairValue
107	Granted	Concept (Share)	For Period		proof:Granted
108	Vested	Concept (Share)	For Period		proof:Vested
109	Forfeited	Concept (Share)	For Period		proof:Forfeited
110	Nonvested Fair Value, Ending Balance	Concept (Share)	As Of		proof:NonvestedFairValue

Here is an example of a roll forward info from a report which will give you a good idea of what the roll forward info information¹⁹:

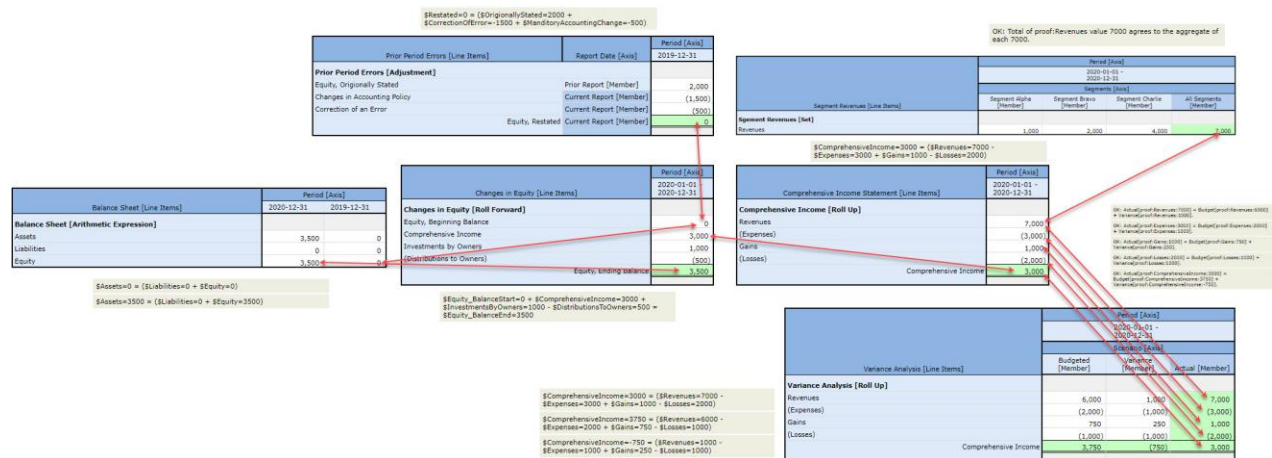
		Period [Axis]
Weighted Average Grant Date Fair Value [Line Items]		2020-01-01 - 2020-12-31
Weighted Average Grant Date Fair Value [Roll Forward Info]		
Nonvested Fair Value, Beginning Balance		32.72
Granted		41.51
Vested		30.92
Forfeited		35.93
Nonvested Fair Value, Ending Balance		36.92

¹⁸ Text block, http://xbrlsite.azurewebsites.net/2020/intermediate-reports/proof/evidence-package/contents/index.html#Rendering-Policies-proof_PoliciesHypercube.html

¹⁹ Roll Forward Info, http://xbrlsite.azurewebsites.net/2020/intermediate-reports/proof/evidence-package/contents/index.html#Rendering-StockPlanActivity-proof_WeightedAverageGrantDateFairValueHypercube.html

And so, with those additional information models and the Roll Up, Roll Forward, and Set you have an understanding of 100% of the information models or concept arrangement patterns that you will ever run across in an XBRL-based digital financial report.

Expanding this notion of articulation using the additional mathematical associations of the PROOF representation it becomes apparent that the information fragments represented are correctly represented because the model is completely intact mathematically as is shown below²⁰:



Specifically note that:

1. The prior period adjustment properly connects to the beginning balance of the changes in equity roll forward.
2. The segment revenues member aggregation properly connects to the income statement roll up.
3. The variance analysis actual amounts tie to the income statement roll up and the variance between actual and budget foot and cross cast.

This proves that the XBRL-based representation of financial report information is appropriate because that representation is confirmed by the global standard XBRL and rules processors show they are consistent with expectation.

²⁰ Articulation of Proof representation mathematical relations, <http://xbrl.azurewebsites.net/2020/master/proof/ProofMathematicalComputations.jpg>