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Elements of Financial Statements Defined by FASB in SFAC 6

Building on the accounting equation

By Charles Hoffman, CPA (Charles.Hoffman@me.com)

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"I skate to where the puck is going to be, not where it has been." *Wayne Gretzky*, legendary Canadian hockey star

Executive summary:

- The double-entry accounting model and the accounting equation form the core shell for all financial reporting schemes.
- FASB issued SFAC 6[1] which defines the elements of financial statements. Ten core high-level financial statements are defined.
- The elements of financial statements are the building blocks from which financial statements are constructed. The elements are the classes of items that comprise a financial statement. The interrelations between the classes of elements are also specified.
- Articulation is the notion that the four primary financial statements are interrelated.
- This document enhances those ten core element definitions in two ways. First, it puts these definitions in machine-readable form[2]. Second, it puts the elements in context by explicitly showing the associations between the defined elements.

[1] FASB, *Statement of Financial Reporting Concepts No. 6 (SFAC 6), Elements of Financial Statements*, https://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1218220132802

[2] Human-readable and machine-readable documentation, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/

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FASB SFAC 6[3] explicitly defines 10 elements of a financial statement. Those elements are: assets, liabilities, equity, investments by owners, distributions to owners, comprehensive income, revenues, expenses, gains, losses.

The elements of financial statements are the building blocks from which financial statements are constructed. The elements are the classes of items that comprise a financial statement.

This document enhances those ten core element definitions in three ways. First, it puts these definitions in machine-readable form. Second, it puts the elements in context by showing the associations between the concepts. Third, it adds additional important concepts that are ultimately defined implicitly or explicitly by the FASB to provide a complete set of core high-level financial report elements.

Double-entry Accounting.

Single-entry accounting is how 'everyone' would do accounting. In fact, that is how accounting was done for about 4,000 years before double-entry accounting was invented. Double-entry accounting was the invention of medieval merchants and was first documented by the Italian mathematician and Franciscan Friar Luca Piccioli[4] in 1494. The section related to double-entry accounting was translated into English in 1914[5].

Double-entry accounting adds an additional important property to the accounting system, that of a clear strategy to identify errors and to remove the errors from the system. Even better, double-entry accounting has a side effect of clearly firewalling errors as either accident or fraud. This then leads to an audit strategy. Double-entry accounting is how professional accountants do accounting.

Which came first, double-entry accounting or the enterprise? It is hard to overstate the impact of double-entry accounting on the evolution of the complex global enterprise[6].

[3] FASB, *Statement of Financial Reporting Concepts No. 6 (SFAC 6)*, *Elements of Financial Statements*, https://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1218220132802
[4] Wikipedia, *Luca Pacioli*, https://en.wikipedia.org/wiki/Luca_Pacioli
[5] J. B. Geijsbeek, *Ancient Double-Entry Bookkeeping*, https://archive.org/details/ancientdoubleent00geij/page/n3
[6] Ian Grigg, *Triple Entry Accounting*, https://iang.org/papers/triple_entry.html

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Foundational Mathematical Equation for Double-Entry Accounting

The foundational basis of double-entry accounting is straightforward. Quoting David Ellerman from his paper *The Math of Double-Entry Bookkeeping: Part I (scalars)*[7]:

> "Given an equation w + … + x = y + … + z, it is not possible to change just one term in the equation and have it still hold. Two or more terms must be changed."

And so, the left-hand side of the equation "w + … + x" (the DEBIT side) must always equal the right-hand side of the equation "y + … + z" (the CREDIT side) in double-entry accounting. The reason that double-entry accounting is used, as contrast to single-entry accounting, is double-entry accounting's capability to detect errors and to distinguish an error from fraud.

Of course, there are a lot of details associated with setting up and operating an accounting system appropriately, but the fundamental feature is that DEBITS must equal CREDITS and if they don't, then something is up which needs to be investigated and corrected.

If you desire to learn more about double-entry accounting, see Colin Dodd's rap song, Debit Credit Theory (Accounting Rap Song)[8].

The Accounting Equation: Framework for Financial Accounting

While the model "Debits = Credits" or the notion of basically using two single entry ledgers and synchronizing them to detect errors or fraud is useful; additional power is provided to double-entry accounting via the accounting equation[9] which is:

"Assets = Liabilities + Equity"

The accounting equation within the double-entry accounting is the fundamental basis for financial accounting. By definition, every financial reporting scheme[10] has this high-level model at its core.

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[7] David Ellerman, *The Math of Double-Entry Bookkeeping: Part I (scalars)*, http://www.ellerman.org/the-math-ofdouble-entry-bookkeeping-part-i-scalars/
[8] YouTube, *Colin Dodd's rap song, Debit Credit Theory (Accounting Rap Song)*, https://www.youtube.com/watch?v=j71Kmxv7smk
[9] Wikipedia, Accounting Equation, https://en.wikipedia.org/wiki/Accounting_equation
[10] Charles Hoffman, CPA, *Comparison of Financial Reporting Schemes High Level Concepts*, http://xbrlsite.azurewebsites.net/2018/Library/ReportingSchemes-2018-12-30.pdf

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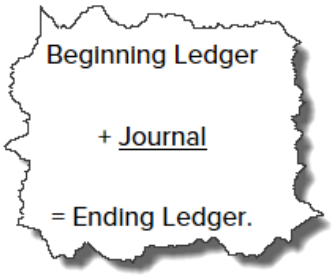
Ledgers and Journals, Stocks and Flows

Another important piece of double-entry accounting is explained well in David Ellerman's article, *The Math of Double-Entry Bookkeeping: Part II (vectors)*, is ledgers and journals[11]. Many accountants use the terms "ledger" and "journal" incorrectly. This works the same for general and special ledgers and journals. This is the relationship between a ledger and a journal:



Ledgers summarized balances. For example, the general ledger summarizes account balances.

Journals record the transactions which make up the changes between ledger balances. Other terms used for the relationship shown above are "roll forward" or "movements" or "stocks and flows" or "account analysis". All three of these terms basically explain the following equation:

"Beginning balance + Additions - Subtractions = Ending balance"

Balance sheet accounts are stocks. Roll forwards of the beginning and ending balances of balance sheet accounts are flows. The income statement is a flow of net income (loss). The cash flow statement is a roll forward of the net change in cash and cash equivalents. The statement of changes in equity is a roll forward of equity accounts.

Many transactions, events, circumstances, and other phenomenon are recorded as transactions in a journal, make their way to a ledger, and then end up in the primary financial statements or within disclosures which detail the line items of the primary financial statements. Much of this information is part of the two trees which make up the roll ups of "Assets" and "Liabilities and Equity". However, other there are other trees that can make up the complete "forest" of a financial report. For more information about the "forest" and the "trees" of a financial report, see the document *Leveraging the Theoretical and Mathematical Underpinnings of a Financial*

[11] David Ellerman, *The Math of Double-Entry Bookkeeping: Part II (vectors)*, http://www.ellerman.org/the-math-of-double-entry-bookkeeping-part-ii-vectors/

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Report[12]. That document also has some good information related to triple-entry accounting which I am not going to get into here.

As pointed out in the document *General Ledger Trial Balance to External Financial Report*[13], each balance sheet line item has a roll forward. While perhaps not reported externally, these roll forwards can be quite helpful internally to verify that a financial report has been created correctly.

Elements of a Financial Report Defined by SFAC 6

The FASB defines the following ten interrelated elements of a financial report:

- Assets
- Liabilities
- Equity
- Investments by Owners
- Distributions to Owners
- Comprehensive Income
- Revenues
- Expenses
- Gains
- Losses

The FASB uses the analogy of a "photograph" and a "motion picture" to differentiate the two types of elements[14]. Three elements that are like a photograph are "assets", "liabilities" and "equity" and are for a point in time. In XBRL terms, they are instants or "as of" a specific point in time. The others are like "motion pictures", over a period of time, in XBRL terms they are durations or "for period".

The FASB explicitly states the components of comprehensive income which include: revenues, expenses, gains, and losses[15].

Note that the balance types, "debit" or "credit", of each of the ten core elements of a financial statement are not articulated by the FASB. However, professional accountants understand the

[12] Charles Hoffman, CPA, *Leveraging the Theoretical and Mathematical Underpinnings of a Financial Report*, http://xbrlsite.azurewebsites.net/2018/Library/TheoreticalAndMathematicalUnderpinningsOfFinancialReport.pdf#page=6
[13] Charles Hoffman, CPA, *General Ledger Trial Balance to External Financial Report*, http://xbrlsite.azurewebsites.net/2018/RoboticFinance/TrialBalanceToReport.pdf
[14] FASB, SFAC 6, page 21, paragraph 20
[15] FASB, SFAC 6, page 21, paragraph 20

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balance type of the ten elements which are the building blocks of a financial report. As such, these balance types can be implied. However, I am explicitly specifying the balance types explicitly in my XBRL representation which makes this crystal clear.

Note the term "interrelated". If you read the definitions you can implicitly understand the specific interrelations. The FASB uses the term "articulation" to describe the notion that financial statements are fundamentally interrelated[16]. They result in financial statements that are fundamentally interrelated and connected mathematically.

The following two equations articulate the fundamental relationships between all these elements of a financial report defined by the FASB in SFAC 6. First, as the FASB stated;

> "Comprehensive Income = Revenues - Expenses + Gains - Losses"

The equation above defines the relationship between comprehensive income and its components. The equation below defines the relations between the other concepts and uses the term "Comprehensive Income" as defined above.

> $0 = (Equity^{T0} + Revenue^{P1} - Expenses^{P1} + Gains^{P1} - Losses^{P1} + InvestmentsByOwners^{P1} - DistributionsToOwners^{P1}) + Liabilities^{T1} - Assets^{T1}$

And so, using both equations, the relations between each of the concepts is crystal clear as long as you understand the balance type (debit, credit) of each of the core elements.

As such, in more visual terms you have the following:

Shell of a statement of financial position (balance sheet)[17]:

Balance Sheet [Abstract]	Period [Axis]	
	2020-12-31	2019-12-31
Balance Sheet [Abstract]		
Assets	3,500	0
Liabilities	0	0
Equity	3,500	0

Shell of a statement of financial performance (comprehensive income statement)[18]:

[16] FASB, SFAC 6, page 21 and 22, paragraph 21
[17] Human readable rendering of balance sheet, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/evidence-package/contents/index.html#Rendering-BS-Implied.html
[18] Human readable rendering of comprehensive income statement, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/evidence-package/contents/index.html#Rendering-IS-Implied.html

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

Shell of statement of changes in equity:

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

We cannot do a cash flow statement yet because SFAC 6 does not define net cash flow.

Four Statement Model with Shell Statements

The four statement model shows the explicitly created articulation or the interrelationships between the four primary financial statements defined by the FASB. However, since net cash flow is not defined by SFAC 6 we can only represent the interrelationships of three of the four statements: balance sheet, income statement, and changes in equity.

Three of the statements of the four statement model can be seen and understood visually as such:

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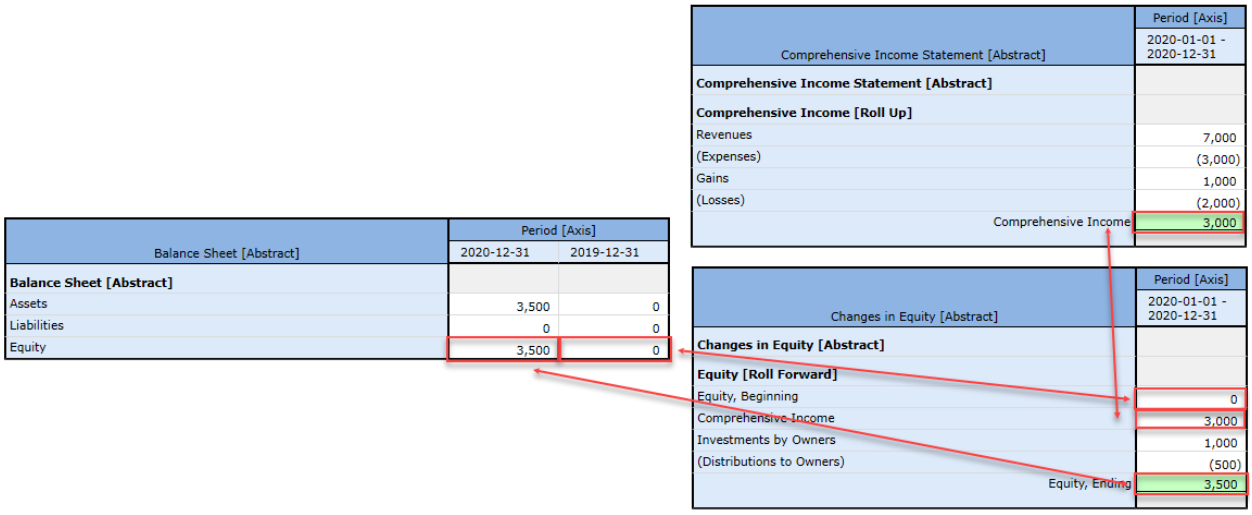

Comprehensive Income Statement [Abstract]	Period [Axis] 2020-01-01 - 2020-12-31
Comprehensive Income Statement [Abstract]	
Comprehensive Income [Roll Up]	
Revenues	7,000
(Expenses)	(3,000)
Gains	1,000
(Losses)	(2,000)
Comprehensive Income	3,000

Balance Sheet [Abstract]	Period [Axis] 2020-12-31	2019-12-31
Balance Sheet [Abstract]		
Assets	3,500	0
Liabilities	0	0
Equity	3,500	0

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

The details and the relationships can be tested by running the supporting XBRL taxonomy and XBRL instance that define the elements, the associations between the elements, and the assertions which show mathematical relations between the elements processed by an XBRL formula processor. Every XBRL formula processor is expected to get exactly the same results although those results can be presented in different ways. Here are those results provided by two different XBRL formula processors:

XBRL formula processor 1:

id	satisfied	message
ASSERTION_CORE_Equality_AccountingEquation (evaluation 1)	satisfied	$Assets=0 = $Liabilities=0 + $Equity=0
ASSERTION_CORE_Equality_AccountingEquation (evaluation 2)	satisfied	$Assets=3500 = $Liabilities=0 + $Equity=3500
ASSERTION_Core_ROLLUP_ComprehensiveIncome (evaluation 1)	satisfied	$ComprehensiveIncome=3000 = ($Revenues=7000 + $Gains=1000 - $Expenses=3000 - $Losses=2000)
ASSERTION_CORE_ROLLFORWARD_Equity (evaluation 1)	satisfied	$Equity_BalanceStart=0 + $ComprehensiveIncome=3000 + $InvestmentsByOwners=1000 - $DistributionsToOwners=500 = $Equity_BalanceEnd=3500
ASSERTION_CORE_CONCEPTUAL_FRAMEWORK_RECONCILATION (evaluation 1)	satisfied	0= (($Equity_BalanceStart=0 + (($Revenues=7000 - $Expenses=3000) + ($Gains=1000 - $Losses=2000)) + ($InvestmentsByOwners=1000 - $DistributionsToOwners=500)) + ($Liabilities_BalanceEnd=0 - $Assets_BalanceEnd=3500))

XBRL formula processor 2[19]:

[19] Human readable results for assertions, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/evidence-package/contents/index.html#BusinessRulesSummary.html

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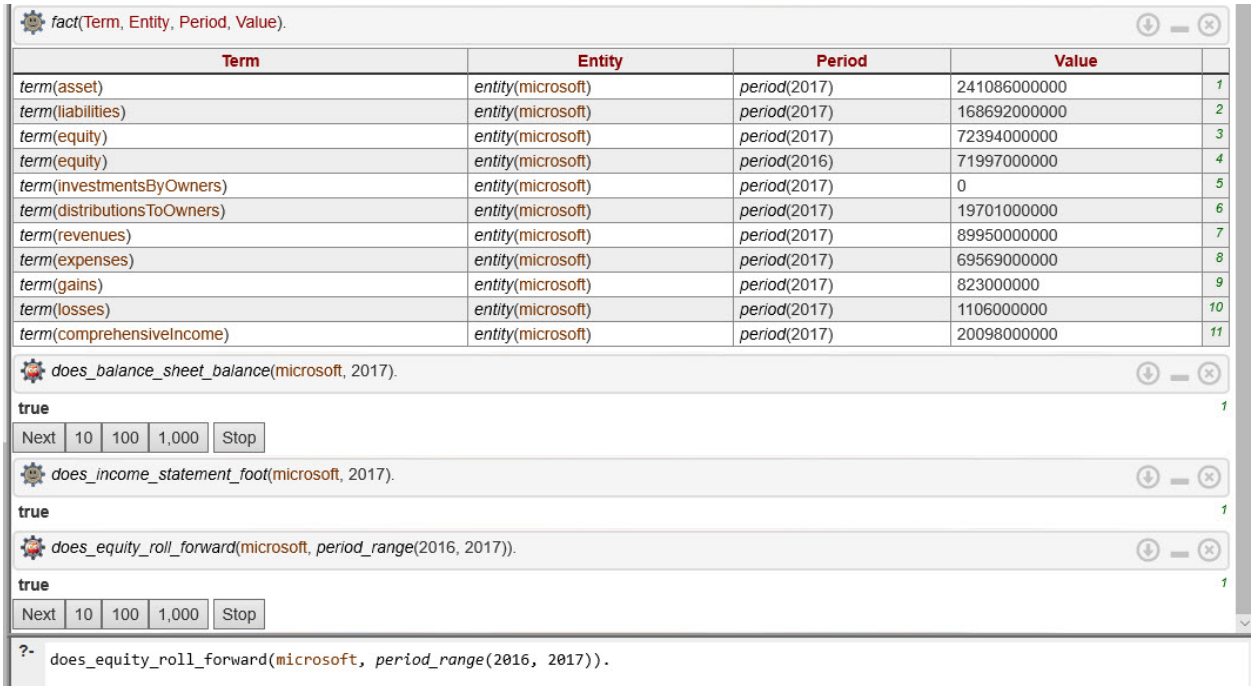
#	Label	Result	Rule
1	Net income foots (ASSERTION_Core_ROLLUP_ComprehensiveIncome)	Pass	$ComprehensiveIncome = ($Revenues + $Gains - $Expenses - $Losses)
2	Accounting Equation (Assets = Liabilities and Equity) (ASSERTION_CORE_Equality_AccountingEquation)	Pass	$Assets = $Liabilities + $Equity
3	Accounting Equation (Assets = Liabilities and Equity) (ASSERTION_CORE_Equality_AccountingEquation)	Pass	$Assets = $Liabilities + $Equity
4	0 = (Equity{T0} + (Revenue{P1} - Expenses{P1} + Gains{P1} - Losses{P1}) + (InvestmentsByOwners{P1} - DistributionsToOwners{P1})) + Liabilities{T1} - Assets{T1} (ASSERTION_CORE_CONCEPTUAL_FRAMEWORK_RECONCILATION)	Pass	0= (($Equity_BalanceStart + (($Revenues - $Expenses) + ($Gains - $Losses)) + ($InvestmentsByOwners - $DistributionsToOwners)) + ($Liabilities_BalanceEnd - $Assets_BalanceEnd))
5	Equity roll forward (Equity{P0} + ComprehensiveIncome + InvestmentsByOwners - DistributionsToOwners = Equity{P1}) (ASSERTION_CORE_ROLLFORWARD_Equity)	Pass	$Equity_BalanceStart + $ComprehensiveIncome + $InvestmentsByOwners - $DistributionsToOwners = $Equity_BalanceEnd

This verifies that the XBRL-based report and the logical relations articulated via that report are as would be expected.

Same Results Using SWI-Prolog

The same results were obtained when running the statements through an online Prolog processor, SWI-Prolog as can be seen below[20]. This is the Prolog syntax[21].



fact(Term, Entity, Period, Value).

Term	Entity	Period	Value	
term(asset)	*entity*(microsoft)	*period*(2017)	241086000000	1
term(liabilities)	*entity*(microsoft)	*period*(2017)	168692000000	2
term(equity)	*entity*(microsoft)	*period*(2017)	72394000000	3
term(equity)	*entity*(microsoft)	*period*(2016)	71997000000	4
term(investmentsByOwners)	*entity*(microsoft)	*period*(2017)	0	5
term(distributionsToOwners)	*entity*(microsoft)	*period*(2017)	19701000000	6
term(revenues)	*entity*(microsoft)	*period*(2017)	89950000000	7
term(expenses)	*entity*(microsoft)	*period*(2017)	69569000000	8
term(gains)	*entity*(microsoft)	*period*(2017)	823000000	9
term(losses)	*entity*(microsoft)	*period*(2017)	1106000000	10
term(comprehensiveIncome)	*entity*(microsoft)	*period*(2017)	20098000000	11

does_balance_sheet_balance(microsoft, 2017).

true 1

Next | 10 | 100 | 1,000 | Stop

does_income_statement_foot(microsoft, 2017).

true 1

does_equity_roll_forward(microsoft, *period_range*(2016, 2017)).

true 1

Next | 10 | 100 | 1,000 | Stop

?- does_equity_roll_forward(microsoft, period_range(2016, 2017)).

The following is the syntax used for the SWI-Prolog application:

```
% FASB SFAC 6, Elements of Financial Statements, in Prolog %
% https://www.fasb.org/pdf/con6.pdf %
% Created by Charles Hoffman, CPA (charles.hoffman@me.com). %
% Public domain: https://creativecommons.org/publicdomain/zero/1.0/ %
% Run SWI-Prolog using https://swish.swi-prolog.org/ %

term(asset).
term(liability).
term(equity).
```

[20] SWI-Prolog, https://swish.swi-prolog.org/

[21] SFAC 6 logical system represented using the Prolog syntax, http://xbrlsite.azurewebsites.net/2019/sbrm/prolog/Prolog_FASB_SFAC6.txt

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```
term(comprehensiveIncome).
term(investmentsByOwners).
term(distributionsToOwners).
term(revenues).
term(expenses).
term(gains).
term(losses).

structure(statementOfFinancialPosition).
structure(statementOfIncome).
structure(statementOfChangesInEquity).

entity(microsoft).
period(2017).
period(2016).

assertion(does_balance_sheet_balance).
assertion(does_income_statement_foot).
assertion(does_equity_roll_forward).

fact(term(asset), entity(microsoft), period(2017), 241086000000).
fact(term(liabilities), entity(microsoft), period(2017),168692000000).
fact(term(equity), entity(microsoft), period(2017),72394000000).
fact(term(equity), entity(microsoft), period(2016),71997000000).

fact(term(investmentsByOwners), entity(microsoft), period(2017),0).
fact(term(distributionsToOwners), entity(microsoft), period(2017),19701000000).

fact(term(revenues), entity(microsoft), period(2017),89950000000).
fact(term(expenses), entity(microsoft), period(2017),69569000000).
fact(term(gains), entity(microsoft), period(2017),823000000).
fact(term(losses), entity(microsoft), period(2017),1106000000).
fact(term(comprehensiveIncome), entity(microsoft), period(2017),20098000000).

% rule Assets = Liabilities + Equity %
does_balance_sheet_balance(Entity, Period) :-
    fact(term(asset),entity(Entity),period(Period),Asset),
    fact(term(liabilities),entity(Entity),period(Period),Liabilities),
    fact(term(equity),entity(Entity),period(Period),Equity),
    Asset is Liabilities + Equity.

% rule ComprehensiveIncome = Revenues - Expenses + Gains - Losses %
does_income_statement_foot(Entity, Period) :-
    fact(term(comprehensiveIncome),entity(Entity),period(Period),ComprehensiveIncome),
    fact(term(revenues),entity(Entity),period(Period),Revenues),
    fact(term(expenses),entity(Entity),period(Period),Expenses),
    fact(term(gains),entity(Entity),period(Period),Gains),
    fact(term(losses),entity(Entity),period(Period),Losses),
    ComprehensiveIncome is Revenues - Expenses + Gains - Losses.

% rule EndingEquity = BeginningEquity + ComprehensiveIncome + InvestmentsByOwners - DistributionsToOwners %
does_equity_roll_forward(Entity, Period) :-
   fact(term(equity),entity(Entity),period(2016),BeginningEquity),
   fact(term(comprehensiveIncome),entity(Entity),period(Period),ComprehensiveIncome),
   fact(term(equity),entity(Entity),period(Period),EndingEquity),
   fact(term(distributionsToOwners),entity(Entity),period(Period),DistributionsToOwners),
   EndingEquity is BeginningEquity + ComprehensiveIncome - DistributionsToOwners.


% rule EndingEquity = BeginningEquity + ComprehensiveIncome + InvestmentsByOwners - DistributionsToOwners
does_equity_roll_forward(Entity, period_range(BeginningPeriod,EndPeriod)) :-
   fact(term(equity),entity(Entity),period(BeginningPeriod),BeginningEquity),
   fact(term(comprehensiveIncome),entity(Entity),period(EndPeriod),ComprehensiveIncome),
   fact(term(equity),entity(Entity),period(EndPeriod),EndingEquity),
   fact(term(investmentsByOwners),entity(Entity),period(EndPeriod),InvestmentsByOwners),
   fact(term(distributionsToOwners),entity(Entity),period(EndPeriod),DistributionsToOwners),
   EndingEquity is BeginningEquity + ComprehensiveIncome + InvestmentsByOwners - DistributionsToOwners.

/** <examples>

?- fact(Term, Entity, Period, Value).
?- does_balance_sheet_balance(microsoft, 2017).
?- does_income_statement_foot(microsoft, 2017).
?- does_equity_roll_forward(microsoft, period_range(2016, 2017)).
?- does_equity_roll_forward(microsoft, period_range(2015, 2017)).

*/
```

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Model Represented in Excel

Below you will see the same model of SFAC 6 represented in XBRL and Prolog above informally in Excel[22]:

Report elements:

Sequence	Prefix	sbrm:ReportElementName	sbrm:ReportElementCategory	sbrm:Datatype	sbrm:BalanceTy	sbrm:CalendarPeriodType
1	core	Assets	Concept	Monetary	Debit	Instant
2	core	BalanceSheetAbstract	Abstract			
3	core	ChangesInEquityAbstract	Abstract			
4	core	ComprehensiveIncome	Concept	Monetary	Credit	Duration
5	core	ComprehensiveIncomeRollUp	Abstract			
6	core	ComprehensiveIncomeStatementAbstract	Abstract			
7	core	DistributionsToOwners	Concept	Monetary	Debit	Duration
8	core	ElementsBalanceSheetSet	Abstract			
9	core	ElementsComprehensiveIncomeDefinedByFASBSet	Abstract			
10	core	ElementsFinancialStatementsDefinedByFASBSet	Abstract			
11	core	Equity	Concept	Monetary	Credit	Instant
12	core	EquityRollForward	Abstract			
13	core	Expenses	Concept	Monetary	Debit	Duration
14	core	Gains	Concept	Monetary	Credit	Duration
15	core	InvestmentsByOwners	Concept	Monetary	Credit	Duration
16	core	Liabilities	Concept	Monetary	Credit	Instant
17	core	Losses	Concept	Monetary	Debit	Duration
18	core	MathematicalAssociationsDefinedByFASBAbstract	Abstract			
19	core	Revenues	Concept	Monetary	Credit	Duration

Labels (Property of report element):

sbrm:ReportElementName	Language	Label Role	Label
Assets	us-EN	Standard	Assets
BalanceSheetAbstract	us-EN	Standard	Balance Sheet Abstract
ChangesInEquityAbstract	us-EN	Standard	Changes in Equity [Abstract]
ComprehensiveIncome	us-EN	Standard	Comprehensive Income
ComprehensiveIncomeRollUp	us-EN	Standard	Comprehensive Income [Roll Up]
ComprehensiveIncomeStatementAbstract	us-EN	Standard	Comprehensive Income Statement [Abstract]
DistributionsToOwners	us-EN	Standard	Distributions to Owners
ElementsBalanceSheetSet	us-EN	Standard	Elements Balance Sheet [Set]
ElementsComprehensiveIncomeDefinedByFASBSet	us-EN	Standard	Elements Comprehensive Income Defined By FASB [Set]
ElementsFinancialStatementsDefinedByFASBSet	us-EN	Standard	Elements Financial Statements Defined By FASB [Set]
Equity	us-EN	Standard	Equity
Equity	us-EN	PeriodStart	Equity, Beginning Balance
Equity	us-EN	PeriodEnd	Equity, Ending Balance
EquityRollForward	us-EN	Standard	Equity [Roll Forward]
Expenses	us-EN	Standard	Expenses
Gains	us-EN	Standard	Gains
InvestmentsByOwners	us-EN	Standard	Investments by Owners
Liabilities	us-EN	Standard	Liabilities
Losses	us-EN	Standard	Losses
MathematicalAssociationsDefinedByFASBAbstract	us-EN	Standard	Mathematical Associations Defined By FASB [Abstract]
Revenues	us-EN	Standard	Revenues

Structures:

[22] SFAC 6 logical system represented informally in Excel, http://xbrlsite.azurewebsites.net/2019/core/core-sfac6/sfac6-Excel.zip

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sbrm:Structure (xbrl:Network | xbrl:Hypercube | sbrm:FactSet)	StructureTitle	sbrm:ConceptArrangmentPattern	sbrm:MemberArrangmentPattern	Order
http://www.xbrlsite.com/core/role/Core | xbrl:ImpliedHypercube | core:ElementsFinancialStatementsDefinedByFASBSet	01-Elements of Financial Statement Defined by SFAC 6	sbrm:Set		1
http://www.xbrlsite.com/core/role/AS | xbrl:ImpliedHypercube | core:MathematicalAssociationsDefinedByFASBAbstract	02-Mathematical Associations Between Elements	sbrm:Set		2
http://www.xbrlsite.com/core/role/BS | xbrl:ImpliedHypercube | core:BalanceSheetAbstract	03-Balance Sheet Elements	sbrm:Set		3
http://www.xbrlsite.com/core/role/IS | xbrl:ImpliedHypercube | core:ComprehensiveIncomeRollUp	04-Comprehensive Income Statement Elements	sbrm:RollUp		4
http://www.xbrlsite.com/core/role/CE | xbrl:ImpliedHypercube | core:EquityRollForward	06-Changes in Equity	sbrm:RollForward		5

Associations:

xbrl:StructureType	xbrl:Structure (Network)	AssociationFromName	AssociationRole	AssociationToName	CalculationPolarity	PreferredLabelRole	Order
Presentation	http://www.xbrlsite.com/core/role/Core	core:ElementsFinancialStatementsDefinedByFASBSet	Parent-Child	core:Assets			1
Presentation	http://www.xbrlsite.com/core/role/Core	core:ElementsFinancialStatementsDefinedByFASBSet	Parent-Child	core:Liabilities			2
Presentation	http://www.xbrlsite.com/core/role/Core	core:ElementsFinancialStatementsDefinedByFASBSet	Parent-Child	core:Equity			3
Presentation	http://www.xbrlsite.com/core/role/Core	core:ElementsFinancialStatementsDefinedByFASBSet	Parent-Child	core:InvestmentsByOwners			4
Presentation	http://www.xbrlsite.com/core/role/Core	core:ElementsFinancialStatementsDefinedByFASBSet	Parent-Child	core:DistributionsToOwners			5
Presentation	http://www.xbrlsite.com/core/role/Core	core:ElementsFinancialStatementsDefinedByFASBSet	Parent-Child	core:ComprehensiveIncome			6
Presentation	http://www.xbrlsite.com/core/role/Core	core:ElementsFinancialStatementsDefinedByFASBSet	Parent-Child	core:Revenues			7
Presentation	http://www.xbrlsite.com/core/role/Core	core:ElementsFinancialStatementsDefinedByFASBSet	Parent-Child	core:Expenses			8
Presentation	http://www.xbrlsite.com/core/role/Core	core:ElementsFinancialStatementsDefinedByFASBSet	Parent-Child	core:Gains			9
Presentation	http://www.xbrlsite.com/core/role/Core	core:ElementsFinancialStatementsDefinedByFASBSet	Parent-Child	core:Losses			10
Presentation	http://www.xbrlsite.com/core/role/AS	core:MathematicalAssociationsDefinedByFASBAbstra	Parent-Child	core:ElementsBalanceSheetSet			11
Presentation	http://www.xbrlsite.com/core/role/AS	core:ElementsBalanceSheetSet	Parent-Child	core:Assets			12
Presentation	http://www.xbrlsite.com/core/role/AS	core:ElementsBalanceSheetSet	Parent-Child	core:Liabilities			13
Presentation	http://www.xbrlsite.com/core/role/AS	core:ElementsBalanceSheetSet	Parent-Child	core:Equity			14
Presentation	http://www.xbrlsite.com/core/role/AS	core:MathematicalAssociationsDefinedByFASBAbstra	Parent-Child	core:ElementsComprehensiveIncomeDefinedByFASBSet			15
Presentation	http://www.xbrlsite.com/core/role/AS	core:ElementsComprehensiveIncomeDefinedByFASBS	Parent-Child	core:Revenues			16
Presentation	http://www.xbrlsite.com/core/role/AS	core:ElementsComprehensiveIncomeDefinedByFASBS	Parent-Child	core:Expenses			17
Presentation	http://www.xbrlsite.com/core/role/AS	core:ElementsComprehensiveIncomeDefinedByFASBS	Parent-Child	core:Gains			18
Presentation	http://www.xbrlsite.com/core/role/AS	core:ElementsComprehensiveIncomeDefinedByFASBS	Parent-Child	core:Losses			19
Presentation	http://www.xbrlsite.com/core/role/AS	core:ElementsComprehensiveIncomeDefinedByFASBS	Parent-Child	core:ComprehensiveIncome			20
Presentation	http://www.xbrlsite.com/core/role/AS	core:MathematicalAssociationsDefinedByFASBAbstra	Parent-Child	core:ElementsFinancialStatementsDefinedByFASBSet			21
Presentation	http://www.xbrlsite.com/core/role/AS	core:ElementsFinancialStatementsDefinedByFASBSet	Parent-Child	core:Assets			22
Presentation	http://www.xbrlsite.com/core/role/AS	core:ElementsFinancialStatementsDefinedByFASBSet	Parent-Child	core:Liabilities			23
Presentation	http://www.xbrlsite.com/core/role/AS	core:ElementsFinancialStatementsDefinedByFASBSet	Parent-Child	core:Equity			24
Presentation	http://www.xbrlsite.com/core/role/AS	core:ElementsFinancialStatementsDefinedByFASBSet	Parent-Child	core:InvestmentsByOwners			25
Presentation	http://www.xbrlsite.com/core/role/AS	core:ElementsFinancialStatementsDefinedByFASBSet	Parent-Child	core:DistributionsToOwners			26
Presentation	http://www.xbrlsite.com/core/role/AS	core:ElementsFinancialStatementsDefinedByFASBSet	Parent-Child	core:ComprehensiveIncome			27
Presentation	http://www.xbrlsite.com/core/role/BS	core:BalanceSheetAbstract	Parent-Child	core:Assets			28
Presentation	http://www.xbrlsite.com/core/role/BS	core:BalanceSheetAbstract	Parent-Child	core:Liabilities			29
Presentation	http://www.xbrlsite.com/core/role/BS	core:BalanceSheetAbstract	Parent-Child	core:Equity			30
Presentation	http://www.xbrlsite.com/core/role/IS	core:ComprehensiveIncomeStatementAbstract	Parent-Child	core:ComprehensiveIncomeRollUp			31
Presentation	http://www.xbrlsite.com/core/role/IS	core:ComprehensiveIncomeRollUp	Parent-Child	core:Revenues			32
Presentation	http://www.xbrlsite.com/core/role/IS	core:ComprehensiveIncomeRollUp	Parent-Child	core:Expenses		http://www.xbrl.org/2009/role/negatedLabel	33
Presentation	http://www.xbrlsite.com/core/role/IS	core:ComprehensiveIncomeRollUp	Parent-Child	core:Gains			34
Presentation	http://www.xbrlsite.com/core/role/IS	core:ComprehensiveIncomeRollUp	Parent-Child	core:Losses		http://www.xbrl.org/2009/role/negatedLabel	35
Presentation	http://www.xbrlsite.com/core/role/IS	core:ComprehensiveIncomeRollUp	Parent-Child	core:ComprehensiveIncome			36
Presentation	http://www.xbrlsite.com/core/role/CE	core:ChangesInEquityAbstract	Parent-Child	core:EquityRollForward			37
Presentation	http://www.xbrlsite.com/core/role/CE	core:EquityRollForward	Parent-Child	core:Equity		http://www.xbrl.org/2003/role/periodStartLabe	38
Presentation	http://www.xbrlsite.com/core/role/CE	core:EquityRollForward	Parent-Child	core:ComprehensiveIncome			39
Presentation	http://www.xbrlsite.com/core/role/CE	core:EquityRollForward	Parent-Child	core:InvestmentsByOwners			40
Presentation	http://www.xbrlsite.com/core/role/CE	core:EquityRollForward	Parent-Child	core:DistributionsToOwners		http://www.xbrl.org/2009/role/negatedLabel	41
Presentation	http://www.xbrlsite.com/core/role/CE	core:EquityRollForward	Parent-Child	core:Equity		http://www.xbrl.org/2003/role/periodEndLabe	42
Calculation	http://www.xbrlsite.com/core/role/IS	core:ComprehensiveIncome	Summation-Iten	core:Revenues	Add		1
Calculation	http://www.xbrlsite.com/core/role/IS	core:ComprehensiveIncome	Summation-Iten	core:Expenses	Subtract		2
Calculation	http://www.xbrlsite.com/core/role/IS	core:ComprehensiveIncome	Summation-Iten	core:Gains	Add		3
Calculation	http://www.xbrlsite.com/core/role/IS	core:ComprehensiveIncome	Summation-Iten	core:Losses	Subtract		4

Assertions: (Rules)

sbrm:Structure (xbrl:Network | xbrl:Hypercube | sbrm:FactSet)	sbrm:RuleType	sbrm:Rule (Assertion)
http://www.xbrlsite.com/core/role/BS | xbrl:ImpliedHypercube | core:BalanceSheetAbstract	sbrm:ConsistencyRule	$Assets = $Liabilities + $Equity
http://www.xbrlsite.com/core/role/CE | xbrl:ImpliedHypercube | core:EquityRollForward	sbrm:ConsistencyRule	$Equity_Ending= $Equity_Beginning + $ComprehensiveIncome + $InvestmentsByOwners - $DistributionsToOwners

Facts:

#	Structure (Network|Hypercube)	Reporting Entity [Aspect]	Calendar Period [Aspect]	Concept [Aspect]	Fact Value	Unit	Rounding
1	http://www.xbrlsite.com/core/role/BS | xbrl:ImpliedHypercube | core:BalanceSheetAbstract	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2019-12-31	core:Assets	0	iso4217:USD	xbrl:INF
2	http://www.xbrlsite.com/core/role/BS | xbrl:ImpliedHypercube | core:BalanceSheetAbstract	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2019-12-31	core:Liabilities	0	iso4217:USD	xbrl:INF
3	http://www.xbrlsite.com/core/role/BS | xbrl:ImpliedHypercube | core:BalanceSheetAbstract	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2019-12-31	core:Equity	0	iso4217:USD	xbrl:INF
4	http://www.xbrlsite.com/core/role/BS | xbrl:ImpliedHypercube | core:BalanceSheetAbstract	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2020-12-31	core:Assets	3500	iso4217:USD	xbrl:INF
5	http://www.xbrlsite.com/core/role/BS | xbrl:ImpliedHypercube | core:BalanceSheetAbstract	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2020-12-31	core:Liabilities	0	iso4217:USD	xbrl:INF
6	http://www.xbrlsite.com/core/role/BS | xbrl:ImpliedHypercube | core:BalanceSheetAbstract	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2020-12-31	core:Equity	3500	iso4217:USD	xbrl:INF

#	Structure (Network|Hypercube)	Reporting Entity [Aspect]	Calendar Period [Aspect]	Concept [Aspect]	Fact Value	Unit	Rounding
1	http://www.xbrlsite.com/core/role/IS | xbrl:ImpliedHypercube | core:ComprehensiveIncomeRollUp	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2019-01-01 | 2020-12-31	core:Revenues	7000	iso4217:USD	xbrl:INF
2	http://www.xbrlsite.com/core/role/IS | xbrl:ImpliedHypercube | core:ComprehensiveIncomeRollUp	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2019-01-01 | 2020-12-31	core:Gains	1000	iso4217:USD	xbrl:INF
3	http://www.xbrlsite.com/core/role/IS | xbrl:ImpliedHypercube | core:ComprehensiveIncomeRollUp	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2019-01-01 | 2020-12-31	core:Expenses	3000	iso4217:USD	xbrl:INF
4	http://www.xbrlsite.com/core/role/IS | xbrl:ImpliedHypercube | core:ComprehensiveIncomeRollUp	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2019-01-01 | 2020-12-31	core:Losses	2000	iso4217:USD	xbrl:INF
5	http://www.xbrlsite.com/core/role/IS | xbrl:ImpliedHypercube | core:ComprehensiveIncomeRollUp	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2019-01-01 | 2020-12-31	core:ComprehensiveIncome	3000	iso4217:USD	xbrl:INF

#	Structure (Network|Hypercube)	Reporting Entity [Aspect]	Calendar Period [Aspect]	Concept [Aspect]	Fact Value	Unit	Rounding
1	http://www.xbrlsite.com/core/role/CE | xbrl:ImpliedHypercube | core:EquityRollForward	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2019-12-31	core:Equity	0	iso4217:USD	xbrl:INF
2	http://www.xbrlsite.com/core/role/CE | xbrl:ImpliedHypercube | core:EquityRollForward	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2020-12-31	core:Equity	3500	iso4217:USD	xbrl:INF
3	http://www.xbrlsite.com/core/role/CE | xbrl:ImpliedHypercube | core:EquityRollForward	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2019-01-01 | 2020-12-31	core:InvestmentsByOwners	1000	iso4217:USD	xbrl:INF
4	http://www.xbrlsite.com/core/role/CE | xbrl:ImpliedHypercube | core:EquityRollForward	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2019-01-01 | 2020-12-31	core:DistributionsToOwners	500	iso4217:USD	xbrl:INF
5	http://www.xbrlsite.com/core/role/CE | xbrl:ImpliedHypercube | core:EquityRollForward	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2019-01-01 | 2020-12-31	core:ComprehensiveIncome	3000	iso4217:USD	xbrl:INF

References: (Property of Report Element)

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Sequence	Prefix	sbrm:ReportElementName	xbrl:ReferenceRole	ref:Publisher	ref:Name	ref:Number	ref:Paragraph	ref:URI	ref:URIDate
1	core	core:Assets	Standard	FASB	SFAC	6	25	https://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1218220132802&acceptedDisclaimer=true	2019-10-22
2	core	core:ComprehensiveIncome	Standard	FASB	SFAC	6	70	https://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1218220132802&acceptedDisclaimer=true	2019-10-22
3	core	core:DistributionsToOwners	Standard	FASB	SFAC	6	67	https://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1218220132802&acceptedDisclaimer=true	2019-10-22
4	core	core:Equity	Standard	FASB	SFAC	6	49	https://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1218220132802&acceptedDisclaimer=true	2019-10-22
5	core	core:Expenses	Standard	FASB	SFAC	6	80	https://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1218220132802&acceptedDisclaimer=true	2019-10-22
6	core	core:Gains	Standard	FASB	SFAC	6	82	https://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1218220132802&acceptedDisclaimer=true	2019-10-22
7	core	core:InvestmentsByOwners	Standard	FASB	SFAC	6	66	https://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1218220132802&acceptedDisclaimer=true	2019-10-22
8	core	core:Liabilities	Standard	FASB	SFAC	6	35	https://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1218220132802&acceptedDisclaimer=true	2019-10-22
9	core	core:Losses	Standard	FASB	SFAC	6	83	https://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1218220132802&acceptedDisclaimer=true	2019-10-22
10	core	core:Revenues	Standard	FASB	SFAC	6	78	https://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1218220132802&acceptedDisclaimer=true	2019-10-22

Currently, I don't have software that will convert the Excel-based information into XBRL or other syntax that could be processed.

Also, note that the Excel format could alternatively have been CSV. The only difference between Excel and CSV is that with Excel all information can be represented within one Excel workbook but with CSV, individual files would need to be created for each table of information.

Shell of the Financial Report Logical System

The double-entry accounting model, the accounting equation, and FASB SFAC 6, *Elements of Financial Statements* forms a logical core of a digital financial statement. A financial statement is a logical system[23].

A logical system or logical theory is made up of a set of **models**, **structures**, **terms**, **associations**, **assertions**, and **facts**. In very simple terms,

- **Logical theory**: A logical theory is a set of *models* that are consistent with that logical theory.
- **Model**: A model is a set of *structures*. A model is an interpretation of a theory.
- **Structure**: A structure is a set of *statements* which describe the structure.
- **Statement**: A statement is a proposition, claim, assertion, belief, idea, or fact about or related to the universe of discourse. There are four broad categories of statements:
    - **Terms**: Terms are statements that define ideas used by the logical theory such as "assets", "liabilities", and "equity".
    - **Associations**: Associations are statements that describe permissible interrelationships between the terms such as "assets is part-of the balance sheet" or "operating expenses is a type-of expense" or "assets = liabilities + equity" or "an asset is a 'debit' and is 'as of' a specific point in time and is always a monetary numeric value".

[23] Charles Hoffman, CPA, *Understanding and Expressing Logical Systems*, http://xbrl.squarespace.com/journal/2019/9/25/understanding-and-expressing-logical-systems.html

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- **Assertions**: Assertions are statements that describe what tend to be IF…THEN…ELSE types of relationships such as "IF the economic entity is a not-for-profit THEN net assets = assets - liabilities; ELSE assets = liabilities + equity"
- **Facts**: Facts are statements about the numbers and words that are provided by an economic entity within their financial report. For example, "assets for the consolidated legal entity Microsoft as of June 20, 2017 was $241,086,000,000 expressed in US dollars and rounded to the nearest millions of dollars.

A logical system can have high to low **precision** and high to low **coverage**. *Precision* is a measure of how precisely the information within a logical system has been represented as contrast to reality for the universe of discourse. *Coverage* is a measure of how completely information in a logical system has been represented relative to the reality for a universe of discourse.

Here is the human-readable and machine-readable logical system that describes the elements of a financial report defined by SFAC 6:

TERMS[24]:

#	Label	Report Element Class	Period Type	Balance	Name
1	**01-Elements of Financial Statement Defined by SFAC 6 [Table]**				(Implied)
2	*Elements of Financial Statements Defined by FASB [Set]*	[Abstract]			core:ElementsFinancialStatementsDefinedByFASBSet
3	Assets	[Concept] Monetary	As Of	Debit	core:Assets
4	Liabilities	[Concept] Monetary	As Of	Credit	core:Liabilities
5	Equity	[Concept] Monetary	As Of	Credit	core:Equity
6	Investments by Owners	[Concept] Monetary	For Period	Credit	core:InvestmentsByOwners
7	Distributions to Owners	[Concept] Monetary	For Period	Debit	core:DistributionsToOwners
8	Comprehensive Income	[Concept] Monetary	For Period	Credit	core:ComprehensiveIncome
9	Revenues	[Concept] Monetary	For Period	Credit	core:Revenues
10	Expenses	[Concept] Monetary	For Period	Debit	core:Expenses
11	Gains	[Concept] Monetary	For Period	Credit	core:Gains
12	Losses	[Concept] Monetary	For Period	Debit	core:Losses

Statements that provide additional information about a term such as labels, references to authoritative literature, properties of the term, etc.[25]:

[24] Machine-readable terms, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/core.xsd
[25] Human-readable term, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/term.jpg

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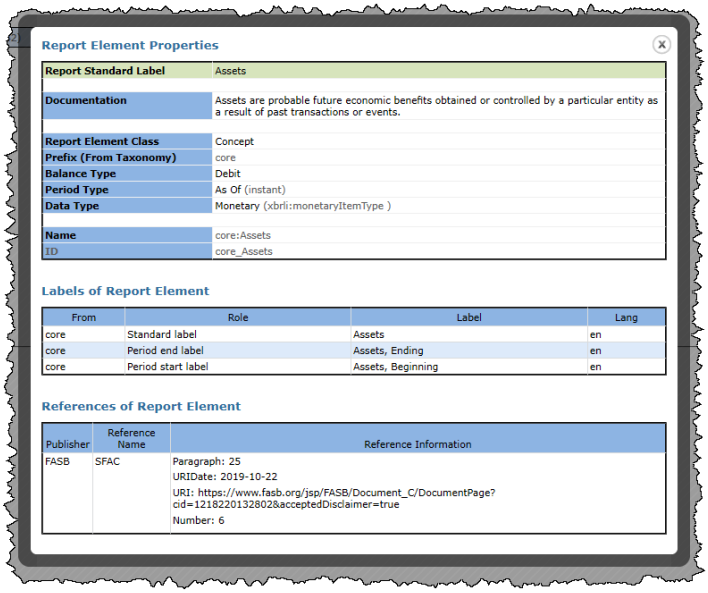

Report Element Properties

Report Standard Label	Assets
Documentation	Assets are probable future economic benefits obtained or controlled by a particular entity as a result of past transactions or events.
Report Element Class	Concept
Prefix (From Taxonomy)	core
Balance Type	Debit
Period Type	As Of (instant)
Data Type	Monetary (xbrli:monetaryItemType)
Name	core:Assets
ID	core_Assets

Labels of Report Element

From	Role	Label	Lang
core	Standard label	Assets	en
core	Period end label	Assets, Ending	en
core	Period start label	Assets, Beginning	en

References of Report Element

Publisher	Reference Name	Reference Information
FASB	SFAC	Paragraph: 25 URIDate: 2019-10-22 URI: https://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1218220132802&acceptedDisclaimer=true Number: 6

ASSOCIATIONS[26,27]:

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

The graphic above shows that the classes of elements revenues, expenses, gains, and losses are all part-of comprehensive income.

ASSERTIONS[28,29]:

[26] Machine-readable associations, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/core-presentation.xml
[27] Human-readable associations, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/evidence-package/contents/index.html#Rendering-IS-Implied.html
[28] Machine-readable assertions, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/core-formula.xml
[29] Human-readable assertions, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/evidence-package/contents/index.html#BusinessRulesSummary.html

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ASSERTION_CORE_Equality_AccountingEquation (evaluation 1)	satisfied	$Assets=0 = $Liabilities=0 + $Equity=0
ASSERTION_CORE_Equality_AccountingEquation (evaluation 2)	satisfied	$Assets=3500 = $Liabilities=0 + $Equity=3500
ASSERTION_Core_ROLLUP_ComprehensiveIncome (evaluation 1)	satisfied	$ComprehensiveIncome=3000 = ($Revenues=7000 + $Gains=1000 - $Expenses=3000 - $Losses=2000)
ASSERTION_CORE_ROLLFORWARD_Equity (evaluation 1)	satisfied	$Equity_BalanceStart=0 + $ComprehensiveIncome=3000 + $InvestmentsByOwners=1000 - $DistributionsToOwners=500 = $Equity_BalanceEnd=3500
ASSERTION_CORE_CONCEPTUAL_FRAMEWORK_RECONCILATION (evaluation 1)	satisfied	0= (($Equity_BalanceStart=0 + (($Revenues=7000 - $Expenses=3000) + ($Gains=1000 - $Losses=2000)) + ($InvestmentsByOwners=1000 - $DistributionsToOwners=500)) + ($Liabilities_BalanceEnd=0 - $Assets_BalanceEnd=3500))

The statements above are assertions that are applicable if an economic entity is a for-profit entity.

FACTS[30,31]:

#	Reporting Entity [Axis]	Period [Axis]	Concept	Fact Value	Unit	Rounding	Parenthetical Explanations
1	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2020-01-01 - 2020-12-31	Losses	2000	USD	INF	
2	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2020-01-01 - 2020-12-31	Investments by Owners	1000	USD	INF	
3	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2020-01-01 - 2020-12-31	Gains	1000	USD	INF	
4	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2019-12-31	Assets	0	USD	INF	
5	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2020-12-31	Assets	3500	USD	INF	
6	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2020-01-01 - 2020-12-31	Revenues	7000	USD	INF	
7	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2020-12-31	Equity	3500	USD	INF	
8	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2019-12-31	Equity	0	USD	INF	
9	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2020-01-01 - 2020-12-31	Comprehensive Income	3000	USD	INF	
10	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2020-12-31	Liabilities	0	USD	INF	
11	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2019-12-31	Liabilities	0	USD	INF	
12	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2020-01-01 - 2020-12-31	Distributions to Owners	500	USD	INF	
13	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)	2020-01-01 - 2020-12-31	Expenses	3000	USD	INF	

Facts are statements or the words and numbers reported within a financial report differentiated from one another by their distinguishable aspects.

STRUCTURES[32,33]:

[30] Machine-readable facts, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/instance.xml
[31] Human-readable facts, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/evidence-package/contents/index.html#FactTableSummary.html
[32] Machine-readable structures, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/core-presentation.xml
[33] Human-readable structures, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/evidence-package/contents/index.html#RenderingSummary.html

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Component: (Network and Table)	
Network	**06-Changes in Equity** (http://www.xbrlsite.com/core/role/CE)
Table	(Implied)

Slicers (applies to each fact value in each table cell)

Reporting Entity [Axis]	GH259400TOMPUOLS65II (http://standards.iso.org/iso/17442)

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

The changes in equity structure is distinguishable from, say, the balance sheet structure or the income statement structure.

MODELS:

In this particular logical system, there is only one set of structures and that set of structures is universally applicable to all economic entities. The relation between “assets” and “liabilities” and “equity” is interpreted to be “assets = liabilities + equity”, there is our only interpretation provided for in this logical system.

However, SFAS 6 allows for another permissible interpretation: “net assets = assets - liabilities". But we do not use that second interpretation of the logical theory in this specific logical system of the financial report we are specifying and describing. We use the first permissible interpretation. We could add another structure to represent this permissible interpretation.

PRECISION AND COVERAGE:

The ***precision*** of the statements made by the models, structures, terms, associations, assertions, and facts in this logical theory or system we are describing is HIGH because the logical system is provably consistent with reality defined by SFAC 6. Further, the ***coverage*** of the logical system is HIGH because we cannot think of or demonstrate that anything is missing from the system. No important *terms* seem to be missing, no *associations*, no *assertions*, no

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models seem to be causing logical problems such as errors, inconsistencies, contradictions, etc. Therefore, this logical system can be deemed to be **properly functioning**.

Showing this graphically below, the universe of discourse we are concerned with at the moment is only SFAC 6. That is represented by the GREEN circle. Because the logical representation has high precision, the representation in PINK is essentially the same size as GREEN showing that the coverage is appropriate. The description is precise because no one really can demonstrate or prove that anything in the system is imprecise. Further, the facts reported, the terms used, the assertions, the associations, the structures that make up the model are all consistent with expectations of all stakeholders that are concerned with this system.

As such, this logical system can be considered consistent, to have high precision and high coverage. Contrast to the accounting equation it is a bit larger but none-the-less fundamentally the same characteristics with different terms, structures, and assertions. This increases the effort to verify that the logical system is consistent, complete, precise and therefore properly functioning. The type of things that can go wrong increases. For example, because you have more structures the pieces that go into a structure can inadvertently intermingled:

Consistent

Complete

Precise

Assets = 3,500
Liabilities = 0
Equity = 3,500

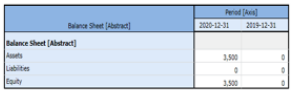
Balance Sheet

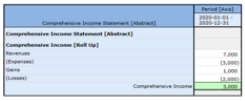
Revenues = 7,000
Expenses = 3,000
Gains = 1,000
Losses = 2,000

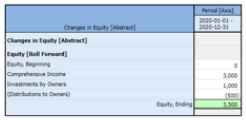
Income Statement

Comprehensive income = 3,000
Investments by Owners = 1,000
Distributions to Owners = 500

Changes in Equity







Assets = Liabilities + Equity

Comprehensive Income =
Revenues - Expenses + Gains - Losses

$0 = (Equity^{T0} + Revenue^{P1} - Expenses^{P1} + Gains^{P1} - Losses^{P1} + Investments\ by\ Owners^{P1} - Distributions\ to\ Owners^{P1}) + Liabilities^{T1} - Assets^{T1}$

SFAC 6

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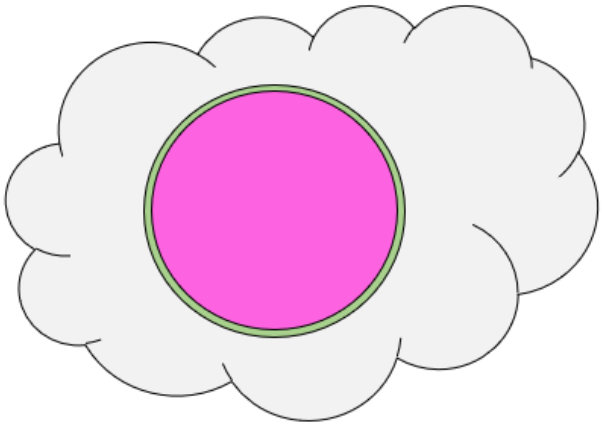

High precision, High coverage (Very good)
All important aspects of reality related to some universe of discourse necessarily to achieve some goal or objective or a set of goals/objectives have been represented.

Framework for Adding Further Details

What has been described thus far is only a core or shell of what might actually be represented in an actual financial report. While the core is small, that core is extremely significant. Incremental additions can be made to the core further expanding the logical system but always keeping the logical system in control. But the examples of the accounting equation and core elements of financial statements defined by SFAC 6 are good starting points because they help you see and understand how this method for proving that the logical system is properly functioning. Also, the universe of discourse is defined specifically by the FASB in SFAC 6.

The next significant expansion step to this logical system can be seen in my document *Enhanced US GAAP Financial Statement Elements*[34]. This step is significant because it adds the fourth statement, the cash flow statement, and additional details to a financial report. The report created for that step is likewise a provably properly functioning logical system[35]. But that is still not a full set of financial statements. You can still wrap your head around the terms, associations, assertions, facts, structures, models, and therefore see that this logical system is likewise precise and complete and therefore a properly functioning logical system.

And so, in the next step additional details are added, in the trial balance version of the next step which is described in the document *General Ledger Trial Balance to External Financial*

[34] Charles Hoffman, CPA, *Enhanced US GAAP Financial Statement Elements*, http://xbrlsite.azurewebsites.net/2019/Core/core-usgaap/EnhancedFinancialReportElements.pdf
[35] Enhanced US GAAP logical system, http://xbrlsite.azurewebsites.net/2019/Core/core-usgaap/

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Report[36]. This expansion step adds detailed line items to the report, additional disclosures, roll forwards for every balance sheet line item, and subclassifications that detail a classification. This logical system becomes harder to get your head around mentally so we start to use automated processes to keep track of things[37].

Component (Network/Table)	Status	Count of Relations	XBRL Technical Syntax Rules	Model Structure Rules	Business Rules (a)	Roll Up Rules (b)	Other Manual Review Tasks	Other Rules and Best Practice Tasks
1110 - Statement - Balance Sheet	Completed	24	OK	OK	OK	OK	OK	OK
1120 - Statement - Income Statement	Completed	7	OK	OK	OK	OK	OK	OK
1130 - Statement - Cash Flow Statement	Completed	16	OK	OK	OK	OK	OK	OK
1210 - Disclosure - Cash and Cash Equivalents Roll Forward	Completed	8	OK	OK	OK	OK	OK	OK
1220 - Disclosure - Receivables Roll Forward	Completed	7	OK	OK	OK	OK	OK	OK
1230 - Disclosure - Inventories	Completed	6	OK	OK	OK	OK	OK	OK
1240 - Disclosure - Property, Plant, and Equipment	Completed	6	OK	OK	OK	OK	OK	OK
1250 - Disclosure - Accounts Payable	Completed	5	OK	OK	OK	OK	OK	OK
1260 - Disclosure - Long-term Debt	Completed	5	OK	OK	OK	OK	OK	OK
1270 - Disclosure - Retained Earnings	Completed	4	OK	OK	OK	OK	OK	OK
(Component not specified)	Completed	0	OK	OK	OK	OK	OK	OK

Because the volume of terms is increasing and the structures are becoming more sophisticated and there is a higher volume of structures, we automate the mechanical and structural aspects of testing the statements made within the logical system using additional automated processes[38]:

#	Disclosure	Category	Level	Pattern	Applicable	Found	Disclosure Consistent	Representation Concept [TEXT BLOCK]	Representation Concept [DETAIL]	Checklist Category	Reason
1	Balance Sheet		Level4Detail	COMPONENT	True	True	CONSISTENT	NOT-EXPECTED	NOT-EXPECTED	Required disclosure	Disclosure always required, satisfied by Assets [Roll Up] and Liabilities and Equity [Roll Up]
2	Assets [Roll Up]		Level4Detail	ROLL UP	True	True	CONSISTENT	NOT-EXPECTED	Assets	Part of disclosure	Disclosure always required
3	Liabilities and Equity [Roll Up]		Level4Detail	ROLL UP	True	True	CONSISTENT	NOT-EXPECTED	Liabilities and Equity	Part of disclosure	Disclosure always required
4	Income Statement		Level4Detail	ROLL UP	True	True	CONSISTENT	NOT-EXPECTED	Net Income (Loss)	Required disclosure	Disclosure always required
5	Cash Flow Statement, Direct Method		Level4Detail	ROLL UP	True	True	CONSISTENT	NOT-EXPECTED	Net Cash Flow	Required disclosure	Disclosure always required
6	Receivables [Roll Forward]		Level4Detail	ROLL FORWARD	True	True	CONSISTENT	NOT-EXPECTED	Receivables	Required disclosure	Disclosure always required
7	Cash and Cash Equivalents [Roll Forward]		Level4Detail	ROLL FORWARD	True	True	CONSISTENT	NOT-EXPECTED	Cash and Cash Equivalents	Line item exists, then disclosure required	Required because line item basic:CashAndCashEquivalents was reported
8	Inventories [Roll Forward]		Level4Detail	ROLL FORWARD	True	True	CONSISTENT	NOT-EXPECTED	Inventories	Line item exists, then disclosure required	Required because line item basic:Inventories was reported
9	Accounts Payable [Roll Forward]		Level4Detail	ROLL FORWARD	True	True	CONSISTENT	NOT-EXPECTED	Accounts Payable	Line item exists, then disclosure required	Required because line item basic:AccountsPayable was reported
10	Property, Plant, and Equipment [Roll Forward]		Level4Detail	ROLL FORWARD	True	True	CONSISTENT	NOT-EXPECTED	Property, Plant and Equipment	Line item exists, then disclosure required	Required because line item basic:PropertyPlantAndEquipment was reported
11	Long-Term Debt [Roll Forward]		Level4Detail	ROLL FORWARD	True	True	CONSISTENT	NOT-EXPECTED	Long-term Debt	Line item exists, then disclosure required	Required because line item basic:LongtermDebt was reported
12	Retained Earnings [Roll Forward]		Level4Detail	ROLL FORWARD	True	True	CONSISTENT	NOT-EXPECTED	Retained Earnings	Line item exists, then disclosure required	Required because line item basic:RetainedEarnings was reported

[36] Charles Hoffman, CPA, *General Ledger Trial Balance to External Financial Report*, http://xbrlsite.azurewebsites.net/2018/RoboticFinance/TrialBalanceToReport.pdf

[37] Verification summary, http://xbrlsite.azurewebsites.net/2018/Prototypes/Basic/Basic-XASB-ConsistentRF/evidence-package/contents/index.html#VerificationDashboard.html

[38] Human-readable disclosure mechanics and reporting checklist results, http://xbrlsite.azurewebsites.net/2018/Prototypes/Basic/Basic-XASB-ConsistentRF/ReportingChecklistResults/Disclosure%20Mechanics%20and%20Reporting%20Checklist.html

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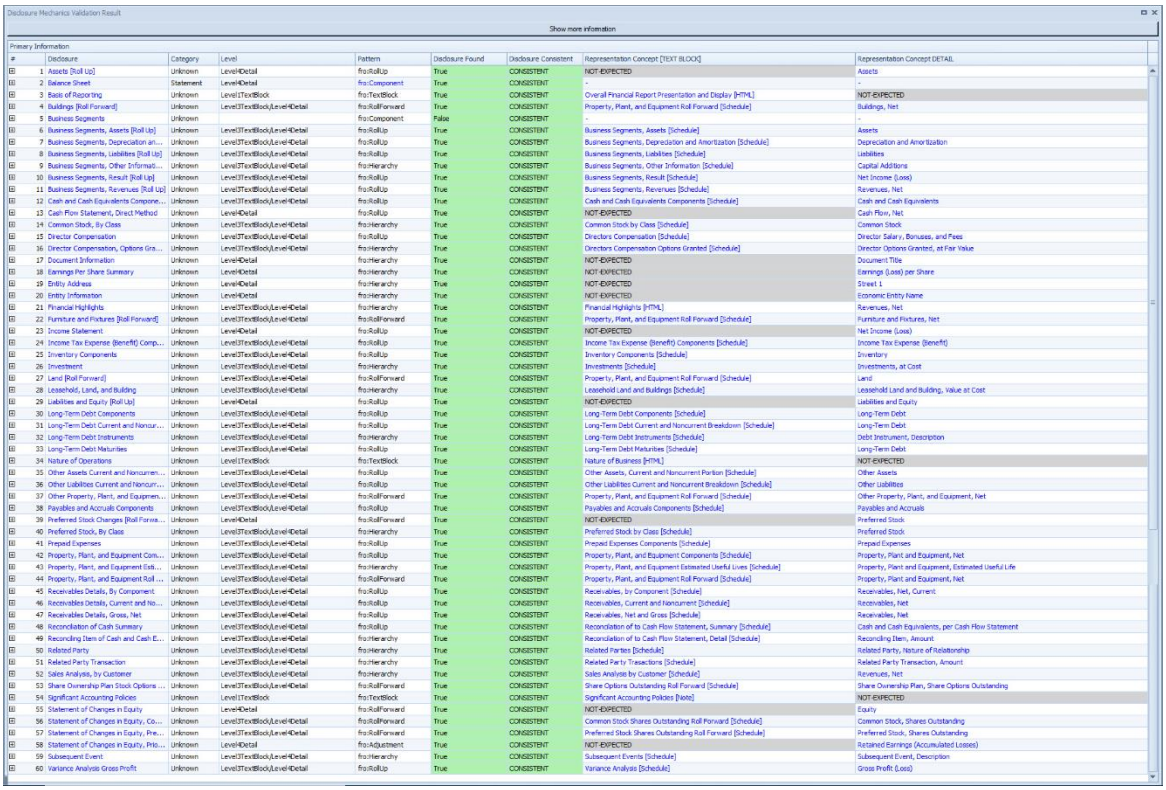
At this step you can begin to see specific types of errors that can, and do, creep into the logical system. The document *Proving Accounting, Structural, Mathematical, and Other Logic of XBRL-based Financial Reports*[39] details and describes nine specific types of errors that I tend to see in XBRL-based digital financial reports that must be controlled and prevented in order to maintain high report quality.

Finally, with a reference implementation of an XBRL-based report using what I call the XASB reporting scheme I try to demonstrate that it is quite possible and how exactly to show that a full report can be proven to be a properly functioning logical system. Anyone can load the XBRL instance[40], view the human-readable version of the report[41], view a screen shot of the reporting checklist validation result[42] a copy of which is shown below, or even download a software application[43] to reproduce the same result that I was able to produce:


Disclosure Mechanics Validation Result

Show more information

Primary Information

#	Disclosure	Category	Level	Pattern	Disclosure Found	Disclosure Consistent	Representation Concept [TEXT BLOCK]	Representation Concept DETAIL
1	Assets [Roll Up]	Unknown	Level4Detail	fro:RollUp	True	CONSISTENT	NOT-EXPECTED	Assets
2	Balance Sheet	Statement	Level4Detail	fro:Component	True	CONSISTENT	-	-
3	Basis of Reporting	Unknown	Level1TextBlock	fro:TextBlock	True	CONSISTENT	Overall Financial Report Presentation and Display [HTML]	NOT-EXPECTED
4	Buildings [Roll Forward]	Unknown	Level3TextBlock,Level4Detail	fro:RollForward	True	CONSISTENT	Property, Plant, and Equipment Roll Forward [Schedule]	Buildings, Net
5	Business Segments	Unknown		fro:Component	False		-	-
6	Business Segments, Assets [Roll Up]	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Business Segments, Assets [Schedule]	Assets
7	Business Segments, Depreciation an...	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Business Segments, Depreciation and Amortization [Schedule]	Depreciation and Amortization
8	Business Segments, Liabilities [Roll Up]	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Business Segments, Liabilities [Schedule]	Liabilities
9	Business Segments, Other Informati...	Unknown	Level3TextBlock,Level4Detail	fro:Hierarchy	True	CONSISTENT	Business Segments, Other Information [Schedule]	Capital Additions
10	Business Segments, Result [Roll Up]	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Business Segments, Result [Schedule]	Net Income (Loss)
11	Business Segments, Revenues [Roll Up]	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Business Segments, Revenues [Schedule]	Revenues, Net
12	Cash and Cash Equivalents Compone...	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Cash and Cash Equivalents Components [Schedule]	Cash and Cash Equivalents
13	Cash Flow Statement, Direct Method	Unknown	Level4Detail	fro:RollUp	True	CONSISTENT	NOT-EXPECTED	Cash Flow, Net
14	Common Stock, By Class	Unknown	Level3TextBlock,Level4Detail	fro:Hierarchy	True	CONSISTENT	Common Stock by Class [Schedule]	Common Stock
15	Director Compensation	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Directors Compensation [Schedule]	Director Salary, Bonuses, and Fees
16	Director Compensation, Options Gra...	Unknown	Level3TextBlock,Level4Detail	fro:Hierarchy	True	CONSISTENT	Directors Compensation Options Granted [Schedule]	Director Options Granted, at Fair Value
17	Document Information	Unknown	Level4Detail	fro:Hierarchy	True	CONSISTENT	NOT-EXPECTED	Document Title
18	Earnings Per Share Summary	Unknown	Level4Detail	fro:Hierarchy	True	CONSISTENT	NOT-EXPECTED	Earnings (Loss) per Share
19	Entity Address	Unknown	Level4Detail	fro:Hierarchy	True	CONSISTENT	NOT-EXPECTED	Street 1
20	Entity Information	Unknown	Level4Detail	fro:Hierarchy	True	CONSISTENT	NOT-EXPECTED	Economic Entity Name
21	Financial Highlights	Unknown	Level3TextBlock,Level4Detail	fro:Hierarchy	True	CONSISTENT	Financial Highlights [HTML]	Revenues, Net
22	Furniture and Fixtures [Roll Forward]	Unknown	Level3TextBlock,Level4Detail	fro:RollForward	True	CONSISTENT	Property, Plant, and Equipment Roll Forward [Schedule]	Furniture and Fixtures, Net
23	Income Statement	Unknown	Level4Detail	fro:RollUp	True	CONSISTENT	NOT-EXPECTED	Net Income (Loss)
24	Income Tax Expense (Benefit) Comp...	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Income Tax Expense (Benefit) Components [Schedule]	Income Tax Expense (Benefit)
25	Inventory Components	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Inventory Components [Schedule]	Inventory
26	Investment	Unknown	Level3TextBlock,Level4Detail	fro:Hierarchy	True	CONSISTENT	Investments [Schedule]	Investments, at Cost
27	Land [Roll Forward]	Unknown	Level3TextBlock,Level4Detail	fro:RollForward	True	CONSISTENT	Property, Plant, and Equipment Roll Forward [Schedule]	Land
28	Leasehold, Land, and Building	Unknown	Level3TextBlock,Level4Detail	fro:Hierarchy	True	CONSISTENT	Leasehold Land and Buildings [Schedule]	Leasehold Land and Building, Value at Cost
29	Liabilities and Equity [Roll Up]	Unknown	Level4Detail	fro:RollUp	True	CONSISTENT	NOT-EXPECTED	Liabilities and Equity
30	Long-Term Debt Components	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Long-Term Debt Components [Schedule]	Long-Term Debt
31	Long-Term Debt Current and Noncur...	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Long-Term Debt Current and Noncurrent Breakdown [Schedule]	Long-Term Debt
32	Long-Term Debt Instruments	Unknown	Level3TextBlock,Level4Detail	fro:Hierarchy	True	CONSISTENT	Long-Term Debt Instruments [Schedule]	Debt Instrument, Description
33	Long-Term Debt Maturities	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Long-Term Debt Maturities [Schedule]	Long-Term Debt
34	Nature of Operations	Unknown	Level1TextBlock	fro:TextBlock	True	CONSISTENT	Nature of Business [HTML]	NOT-EXPECTED
35	Other Assets Current and Noncurren...	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Other Assets, Current and Noncurrent Portion [Schedule]	Other Assets
36	Other Liabilities Current and Noncur...	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Other Liabilities Current and Noncurrent Breakdown [Schedule]	Other Liabilities
37	Other Property, Plant, and Equipmen...	Unknown	Level3TextBlock,Level4Detail	fro:RollForward	True	CONSISTENT	Property, Plant, and Equipment Roll Forward [Schedule]	Other Property, Plant, and Equipment, Net
38	Payables and Accruals Components	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Payables and Accruals Components [Schedule]	Payables and Accruals
39	Preferred Stock Changes [Roll Forwa...	Unknown	Level4Detail	fro:RollForward	True	CONSISTENT	NOT-EXPECTED	Preferred Stock
40	Preferred Stock, By Class	Unknown	Level3TextBlock,Level4Detail	fro:Hierarchy	True	CONSISTENT	Preferred Stock by Class [Schedule]	Preferred Stock
41	Prepaid Expenses	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Prepaid Expenses Components [Schedule]	Prepaid Expenses
42	Property, Plant, and Equipment Com...	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Property, Plant, and Equipment Components [Schedule]	Property, Plant and Equipment, Net
43	Property, Plant, and Equipment Esti...	Unknown	Level3TextBlock,Level4Detail	fro:Hierarchy	True	CONSISTENT	Property, Plant, and Equipment Estimated Useful Lives [Schedule]	Property, Plant and Equipment, Estimated Useful Life
44	Property, Plant, and Equipment Roll ...	Unknown	Level3TextBlock,Level4Detail	fro:RollForward	True	CONSISTENT	Property, Plant, and Equipment Roll Forward [Schedule]	Property, Plant and Equipment, Net
45	Receivables Details, By Component	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Receivables, by Component [Schedule]	Receivables, Net, Current
46	Receivables Details, Current and No...	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Receivables, Current and Noncurrent [Schedule]	Receivables, Net
47	Receivables Details, Gross, Net	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Receivables, Net and Gross [Schedule]	Receivables, Net
48	Reconciliation of Cash Summary	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Reconciliation of to Cash Flow Statement, Summary [Schedule]	Cash and Cash Equivalents, per Cash Flow Statement
49	Reconciling Item of Cash and Cash E...	Unknown	Level3TextBlock,Level4Detail	fro:Hierarchy	True	CONSISTENT	Reconciliation of to Cash Flow Statement, Detail [Schedule]	Reconciling Item, Amount
50	Related Party	Unknown	Level3TextBlock,Level4Detail	fro:Hierarchy	True	CONSISTENT	Related Parties [Schedule]	Related Party, Nature of Relationship
51	Related Party Transaction	Unknown	Level3TextBlock,Level4Detail	fro:Hierarchy	True	CONSISTENT	Related Party Transactions [Schedule]	Related Party Transaction, Amount
52	Sales Analysis, by Customer	Unknown	Level3TextBlock,Level4Detail	fro:Hierarchy	True	CONSISTENT	Sales Analysis by Customer [Schedule]	Revenues, Net
53	Share Ownership Plan Stock Options ...	Unknown	Level3TextBlock,Level4Detail	fro:RollForward	True	CONSISTENT	Share Options Outstanding Roll Forward [Schedule]	Share Ownership Plan, Share Options Outstanding
54	Significant Accounting Policies	Unknown	Level1TextBlock	fro:TextBlock	True	CONSISTENT	Significant Accounting Policies [Note]	NOT-EXPECTED
55	Statement of Changes in Equity	Unknown	Level4Detail	fro:RollForward	True	CONSISTENT	NOT-EXPECTED	Equity
56	Statement of Changes in Equity, Co...	Unknown	Level3TextBlock,Level4Detail	fro:RollForward	True	CONSISTENT	Common Stock Shares Outstanding Roll Forward [Schedule]	Common Stock, Shares Outstanding
57	Statement of Changes in Equity, Pre...	Unknown	Level3TextBlock,Level4Detail	fro:RollForward	True	CONSISTENT	Preferred Stock Shares Outstanding Roll Forward [Schedule]	Preferred Stock, Shares Outstanding
58	Statement of Changes in Equity, Prio...	Unknown	Level4Detail	fro:Adjustment	True	CONSISTENT	NOT-EXPECTED	Retained Earnings (Accumulated Losses)
59	Subsequent Event	Unknown	Level3TextBlock,Level4Detail	fro:Hierarchy	True	CONSISTENT	Subsequent Events [Schedule]	Subsequent Event, Description
60	Variance Analysis Gross Profit	Unknown	Level3TextBlock,Level4Detail	fro:RollUp	True	CONSISTENT	Variance Analysis [Schedule]	Gross Profit (Loss)

[39] Charles Hoffman, CPA, *Proving Accounting, Structural, Mathematical, and Other Logic of XBRL-based Financial Reports*, http://xbrlsite.azurewebsites.net/2019/Library/ProvingAccountingStructuralMathematicsLogic.pdf
[40] XASB instance, http://xbrlsite.azurewebsites.net/2016/conceptual-model/reporting-scheme/xasb/taxonomy/company-instance.xml
[41] XASB human-readable evidence package, http://xbrlsite.azurewebsites.net/2016/conceptual-model/reporting-scheme/xasb/taxonomy/evidence-package/contents/index.html#Rendering-FinancialHighlightsSchedule-gaap_FinancialHighlightsTable.html
[42] XASB reporting checklist validation result, http://xbrlsite.azurewebsites.net/2016/conceptual-model/reporting-scheme/xasb/taxonomy/Validation_DisclosureMechanics.jpg
[43] Pesseract download, http://pesseract.azurewebsites.net/#menu3

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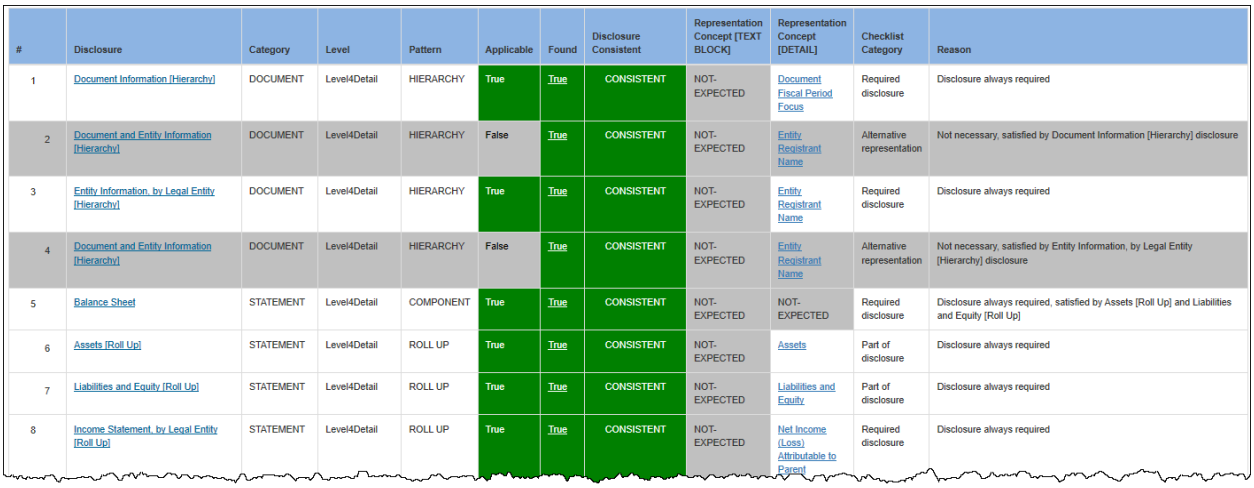
What the screen shot above is intended to communicate is that the same basic techniques used to prove that the SFAC 6 logical system is properly functioning can be used to verify that any XBRL-based financial report can be proven to be properly functioning or specify specifically where it is not properly functioning.

The key is simple: the facts, assertions, associations, terms, structures, and models that make statements about the logical system MUST be in a state of equilibrium where no, say, assertion is missing that would have proven that a fact is misrepresented, inconsistent with, or contradicts some other fact and a quality problem can therefore slip into the logical system undetected.

By way of contrast, the Microsoft 2017 10-K was tested using this method[44]. That Microsoft report can be broken down into fragments. That report has 194 distinct testable fragments referred to as fact sets within its XBRL-based financial report. This report was verified using this same method and a human-readable version of this report was generated[45] and the mechanical tests of the structures was created as well[46].



#	Disclosure	Category	Level	Pattern	Applicable	Found	Disclosure Consistent	Representation Concept [TEXT BLOCK]	Representation Concept [DETAIL]	Checklist Category	Reason
1	Document Information [Hierarchy]	DOCUMENT	Level4Detail	HIERARCHY	True	True	CONSISTENT	NOT-EXPECTED	Document Fiscal Period Focus	Required disclosure	Disclosure always required
2	Document and Entity Information [Hierarchy]	DOCUMENT	Level4Detail	HIERARCHY	False	True	CONSISTENT	NOT-EXPECTED	Entity Registrant Name	Alternative representation	Not necessary, satisfied by Document Information [Hierarchy] disclosure
3	Entity Information, by Legal Entity [Hierarchy]	DOCUMENT	Level4Detail	HIERARCHY	True	True	CONSISTENT	NOT-EXPECTED	Entity Registrant Name	Required disclosure	Disclosure always required
4	Document and Entity Information [Hierarchy]	DOCUMENT	Level4Detail	HIERARCHY	False	True	CONSISTENT	NOT-EXPECTED	Entity Registrant Name	Alternative representation	Not necessary, satisfied by Entity Information, by Legal Entity [Hierarchy] disclosure
5	Balance Sheet	STATEMENT	Level4Detail	COMPONENT	True	True	CONSISTENT	NOT-EXPECTED	NOT-EXPECTED	Required disclosure	Disclosure always required, satisfied by Assets [Roll Up] and Liabilities and Equity [Roll Up]
6	Assets [Roll Up]	STATEMENT	Level4Detail	ROLL UP	True	True	CONSISTENT	NOT-EXPECTED	Assets	Part of disclosure	Disclosure always required
7	Liabilities and Equity [Roll Up]	STATEMENT	Level4Detail	ROLL UP	True	True	CONSISTENT	NOT-EXPECTED	Liabilities and Equity	Part of disclosure	Disclosure always required
8	Income Statement, by Legal Entity [Roll Up]	STATEMENT	Level4Detail	ROLL UP	True	True	CONSISTENT	NOT-EXPECTED	Net Income (Loss) Attributable to Parent	Required disclosure	Disclosure always required

But the logical system of this report is not provably a properly functioning logical system. Why? While the Microsoft report tends to be very precise in that there are only a very small amount of inconsistencies discovered including no nature of operations disclosure and only a portion of the restructuring charges disclosure which should be investigated; the mechanical and structural rules used to test the report only exercised about 37 of the 194 total structures. This

[44] Microsoft 2017 10-K filed with the SEC, https://www.sec.gov/Archives/edgar/data/789019/000156459017014900/0001564590-17-014900-index.htm
[45] Microsoft 2017 10-K evidence package generated by XBRL Cloud, http://xbrlsite.azurewebsites.net/2017/Prototypes/Microsoft2017/evidence-package/
[46] Microsoft 2017 10-K disclosure mechanics and reporting checklist generated by XBRL Cloud, http://xbrlsite.azurewebsites.net/2017/Prototypes/Microsoft2017/Disclosure%20Mechanics%20and%20Reporting%20Checklist.html

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is because the set of machine-readable rules used to exercise the report is not complete. Because of the missing rules the logical system of the report is not provably properly functioning because (a) facts could have been reported incorrectly and (b) there are no rules to discover the error.

The financial report logical system can be made more complete by adding the additional rules that are currently missing and then the report can then be proven to be a properly functioning logical system.

This method is the audit strategy for XBRL-based reports described in the document *Auditing XBRL-based Financial Reports*[47].

Variability Caused by Alternative Intermediate Components of Comprehensive Income

While financial reports must fit within the elements of a financial report defined by a financial reporting scheme; financial reports are not forms. Specific variability is anticipated and allowed by financial reporting schemes such as US GAAP, IFRS, IPSAS, GAS, FAS, etc.[48] By far, the most variability that exists within a set of financial statements exists on the income statement. SFAC 6 discusses the notion of intermediate components[49] of comprehensive income:

> "Examples of intermediate components in business enterprises are gross margin, income from continuing operations before taxes, income from continuing operations, and operating income. Those intermediate components are, in effect, subtotals of comprehensive income and often of one another in the sense that they can be combined with each other or with the basic components to obtain other intermediate measures of comprehensive income."

Basically, variability can be caused by choosing to report different common subtotals or by choosing to report specific line items rather than others. I refer to these different subtotals and specific line items as the notion of reporting styles[50]. This variability is not random or completely arbitrary. There are common reporting style patterns.

Of the four concepts "revenues", "expenses", "gains", and "losses" there are themes in the definitions of the terms. One theme is the notion of something related to an "entity's ongoing major or central

[47] Charles Hoffman, CPA, *Auditing XBRL-based Financial Reports*, http://xbrlsite.azurewebsites.net/2019/Library/AudtingXBRLBasedFinancialReports.pdf
[48] Charles Hoffman, CPA, *Comparison of Elements of Financial Statements*, http://xbrlsite.azurewebsites.net/2019/Core/ElementsOfFinancialStatements.pdf
[49] FASB, SFAC 6, page 47, paragraph 77.
[50] Open Framework for Implementing XBRL-based Financial Reporting, *Reporting Styles*, http://xbrlsite.azurewebsites.net/2019/Framework/Details/ReportingStyle.html

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operations" (i.e. revenues, expenses) and something "from peripheral or incidental transactions" (i.e. gains, losses). This notion is discussed in SFAC 6.

Of the approximately 6,000 public companies that report to the SEC, 87% of those companies using one of only nine different sets of intermediate components, i.e. subtotals, to report their income statements. About 89.1% of public companies are completely consistent with the patterns of alternative intermediate component organization schemes (i.e. reporting styles) and approximately 99.24% of total relations are consistent with expectation[51]. This is all measurable.

Measurements can be used to establish the assertions and associations necessary and therefore the structures and models necessary in order to both explain and verify reported facts within XBRL-based financial reports.

This approach works for every financial reporting scheme[52]. This is a fundamental feature of financial reporting. All of this is provable using mathematics, the double-entry accounting model, the accounting equation, the elements of financial statements defined by standards setters, and the actual financial reports created by economic entities.

XBRL Artifacts

The following is a summary of the XBRL artifacts shown in red under the primitive XBRL syntax objects used to represent the information:

- **Term (primitive or atomic)**
  - Dimension (a.k.a. Axis)
    - Entity
      - **Some entity**
    - Period
      - **2019-12-31**
      - **2020-01-01 to 2020-12-31**
      - **2020-12-31**
    - Concept
  - Member
  - Primary Items (Line Items)
  - Abstract

[51] Quarterly XBRL-based Public Company Financial Report Quality Measurement (March 2019), http://xbrl.squarespace.com/journal/2019/3/29/quarterly-xbrl-based-public-company-financial-report-quality.html

[52] Charles Hoffman, CPA, Comparison of Elements of Financial Statement, http://xbrlsite.azurewebsites.net/2019/Core/ElementsOfFinancialStatements.pdf

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        - **Balance sheet [Abstract]**
        - **Comprehensive Income Statement [Abstract]**
        - **Changes in Equity [Abstract]**
    - Concept
        - Level 1 Note Text Block
        - Level 2 Policy Text Block
        - Level 3 Disclosure Text Block
        - Level 4 Detail
            - **Assets**
            - **Liabilities**
            - **Equity**
            - **Comprehensive Income**
            - **Investments by Owners**
            - **Distributions to Owners**
            - **Revenues**
            - **Expenses**
            - **Gains**
            - **Losses**
- **Structure (functional term)**
    - Network
        - Document
        - Statement
            - **Balance Sheet**
            - **Comprehensive Income Statement**
            - **Changes in Equity Statement**
        - Disclosure
        - Schedule
    - Hypercube (a.k.a. Table)
- **Associations**
    - Parent-child
        - **Balance Sheet [Set] (parent-child) Assets**
        - **Balance Sheet [Set] (parent-child) Liabilities**
        - **Balance Sheet [Set] (parent-child) Equity**
        - **Comprehensive Income [Roll Up] (parent-child) Revenues**
        - **Comprehensive Income [Roll Up] (parent-child) Expenses**
        - **Comprehensive Income [Roll Up] (parent-child) Gains**
        - **Comprehensive Income [Roll Up] (parent-child) Losses**
        - **Equity [Roll Forward] (parent-child) Equity**

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- **Equity [Roll Forward] (parent-child) Comprehensive Income**
- **Equity [Roll Forward] (parent-child) Investments by Owners**
- **Equity [Roll Forward] (parent-child) Distributions to Owners**
-

– Summation-item
– Essence-alias
– General-special
– Other associations
– Property associations
  - Concept-label
    - **Assets (concept-label) Assets**
    - **Liabilities (concept-label) Liabilities**
    - **Equity (concept-label) Equity**
    - **ComprehensiveIncome (concept-label) Comprehensive Income**
    - **DistributionsToOwners (concept-label) Distributions to Owners**
    - **InvestmentsByOwners (concept-label) Investments by Owners**
    - **Revenues (concept-label) Revenues**
    - **Gains (concept-label) Gains**
    - **Expenses (concept-label) Expenses**
    - **Losses (concept-label) Losses**
    -
  - Label-role
  - Concept-reference
    - **Assets (concept-reference) SFAC 6**
    - **Liabilities (concept-reference) SFAC 6**
    - **Equity (concept-reference) SFAC 6**
    - **Comprehensive Income (concept-reference) SFAC 6**
    - **Investments by Owners (concept-reference) SFAC 6**
    - **Distributions to Owners (concept-reference) SFAC 6**
    - **Revenues (concept-reference) SFAC 6**
    - **Expenses (concept-reference) SFAC 6**
    - **Gains (concept-reference) SFAC 6**
    - **Losses (concept-reference) SFAC 6**
  - Reference-role
  - Reference-part

- **Assertion**
  – XBRL Formula or XBRL Calculation
    - **Assets = Liabilities + Equity**

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- **Comprehensive Income = Revenues – Expenses + Gains – Losses**
- **Equity (Ending) = Equity (Beginning) + Comprehensive Income + Investments by Owners – Distributions to Owners**

- **Fact**
  - **Some entity; 2019-12-31; Assets; 0; USD**
  - **Some entity; 2019-12-31; Liabilities; 0; USD**
  - **Some entity; 2019-12-31; Equity; 0; USD**
  - **Some entity; 2020-12-31; Assets; 3,500; USD**
  - **Some entity; 2020-12-31; Liabilities; 0; USD**
  - **Some entity; 2020-12-31; Equity; 3,500; USD**
  - **Some entity; 2019-12-31 to 2020-12-31; Revenues; 7,000; USD**
  - **Some entity; 2019-12-31 to 2020-12-31; Expenses; 3,000; USD**
  - **Some entity; 2019-12-31 to 2020-12-31; Gains; 1,000; USD**
  - **Some entity; 2019-12-31 to 2020-12-31; Losses; 2,000; USD**
  - **Some entity; 2019-12-31 to 2020-12-31; Comprehensive Income; 3,000; USD**
  - **Some entity; 2019-12-31 to 2020-12-31; Investments by Owners; 1,000; USD**
  - **Some entity; 2019-12-31 to 2020-12-31; Distributions to Owners; 2500; USD**