Financial Report Genome Project

Digitizing a general purpose or special purpose financial report

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Last Revised – November 7, 2019 (DRAFT)

"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.
- Adding a set of common elements to financial statements and set of common structures of financial statements builds on that initial foundation.
- Understanding that a financial report is a logical system and how that logical system operates helps one see the possibilities offered by digital.
- One global standard digital financial report framework is possible.
- Minimize unjustifiable differences between implementation of XBRL by different financial reporting schemes.
- Variability is inherent and intentional in financial reports. Variability is not random or arbitrary or illogical. There are leverageable patterns.
- The payoff will be supercharged software that serves its human users to do the work of accounting, reporting, auditing, and analysis in this digital era.

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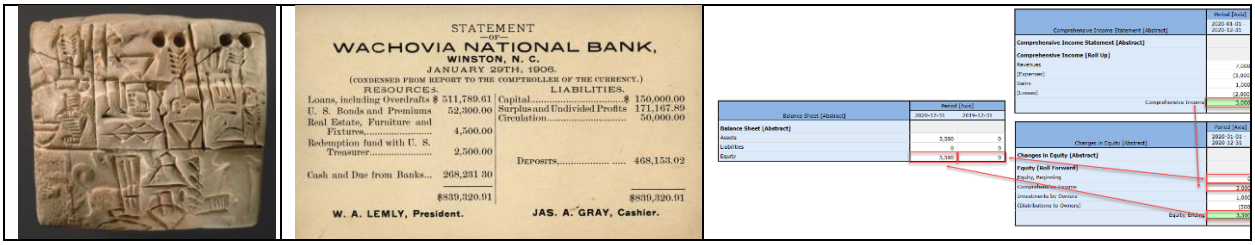
Between 5,000 and 10,000 years ago farmers in Mesopotamia, where agriculture was born, used physical object to count crops and animals[1]. The distinction between types of crops or animals was made by using different types and shapes of objects. Then, in about 3200 BC, around 5,000 years ago, the first spreadsheet was invented.

These farmers began documenting information using clay tablets in the earliest form of human writing ever discovered called Cuneiform. They partitioned their clay tablet into rows, columns, and cells. These farmers used single-entry accounting. The spreadsheet below documents an account of barley distribution[2].

In 1211 AD a bank in Florence was the first documented use of double-entry accounting[3]. Between 1299 AD and 1300 AD double-entry accounting came of age. In 1494 AD during the Renaissance, Venetian mathematician and Franciscan friar Luca Pacioli[4] published a book, *Summa de arithmetica, geometria. Proportioni et proportionalita* (*Sum of Arithmetic, Geometry, Proportion and Proportionality*)[5]. That book documented an approach to accounting now called double-entry bookkeeping and recommended that others use this approach. The approach allowed for better error detection and the ability to differentiate unintended errors from fraud. Accountants adopted that new approach.

In September 1999, the first meeting of what was to become the XBRL International Consortium was held in New York City at the offices of the American Institute of Certified Public Accountants (AICPA)[6] to begin creating the last piece of the puzzle needed to digitize the accounting, reporting, auditing, and analysis process.



[1] Denise Schmandt-Bessersat, *On the origins of writing*, YouTube.com, https://www.youtube.com/watch?v=kidWYpJFb0

[2] Metropolitan Museum, Proto-Cuneiform tablet with seal impressions: administrative account of barley distribution with cylinder seal impression of a male figure, hunting dogs, and boars, https://www.metmuseum.org/art/collection/search/329081

[3] Geoffrky Alan Lee, The Development of Italian Bookkeeping 1211–1300, Wiley, https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1467-6281.1973.tb00183.x

[4] Wikipedia, Luca Pacioli, https://en.wikipedia.org/wiki/Luca_Pacioli

[5] Wikipedia, Summa de arithmetica, https://en.wikipedia.org/wiki/Summa_de_arithmetica

[6] Ten Years Ago the XBRL Journey Began, http://xbrl.squarespace.com/journal/2008/4/21/ten-years-ago-the-xbrl-journey-began.html

This document helps you to see that double entry accounting was built for computers but until now we did not have the means to put all the puzzle pieces together. But now we do.

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[7] in 1494. The section related to double-entry accounting was translated into English in 1914[8].

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[9].

Mathematics Magazine published an article written by David Ellerman, *The Mathematics of Double Entry Bookkeeping*[10], where Ellerman points out that double entry accounting is based on well-known mathematics construction from undergraduate algebra. But Ellerman laments, "Mathematics and accounting truly seem to live in disjoint universes with no trespassing between them." Well, I speculate that XBRL-based accounting, reporting, auditing, and analysis will join the universes of accounting and at least computer science if not mathematics.

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)*[11]:

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[7] Wikipedia, *Luca Pacioli*, https://en.wikipedia.org/wiki/Luca_Pacioli
[8] J. B. Geijsbeek, *Ancient Double-Entry Bookkeeping*, https://archive.org/details/ancientdoubleent00geij/page/n3
[9] Ian Grigg, *Triple Entry Accounting*, https://iang.org/papers/triple_entry.html
[10] David Ellerman, Mathematics Magazine, *The Mathematics of Double Entry Bookkeeping*, http://www.ellerman.org/wp-content/uploads/2012/12/DEB-Math-Mag.CV_.pdf
[11] David Ellerman, *The Math of Double-Entry Bookkeeping: Part I (scalars)*, http://www.ellerman.org/the-math-ofdouble-entry-bookkeeping-part-i-scalars/

> "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)[12].

The Accounting Equation: Framework of Financial Accounting and Reporting

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[13] 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[14] has this high-level model at its core.

This equation is basic and easy to understand just by reading it. But computers cannot read the human-readable form. However, that equation can be put into machine-readable form which I have done[15].

[12] YouTube, *Colin Dodd's rap song, Debit Credit Theory (Accounting Rap Song)*, https://www.youtube.com/watch?v=j71Kmxv7smk
[13] Wikipedia, Accounting Equation, https://en.wikipedia.org/wiki/Accounting_equation
[14] Charles Hoffman, CPA, *Comparison of Financial Reporting Schemes High Level Concepts*, http://xbrlsite.azurewebsites.net/2018/Library/ReportingSchemes-2018-12-30.pdf
[15] Accounting Equation in human and machine-readable form, http://xbrlsite.azurewebsites.net/2019/Core/master-ae/

You can use the machine-readable information to (a) test to be sure the accounting equation actually works and (b) to describe the logical system in both human-readable and machine-readable terms:

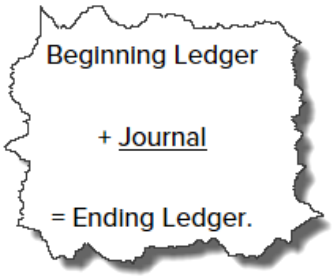
Value Assertions

id	satisfied	message
ASSERTION_AccountingEquation (evaluation 1)	satisfied	$Assets=5000 = $Liabilities=1000 + $Equity=4000

All of this is explained in the document, *Accounting Equation*[16]. This may seem like "stating the obvious", but this simple equation is excellent for testing and explaining things.

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[17]. 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"

[16] Charles Hoffman, CPA, Accounting Equation, http://xbrlsite.azurewebsites.net/2019/Core/master-ae/Documentation.pdf
[17] David Ellerman, *The Math of Double-Entry Bookkeeping: Part II (vectors)*, http://www.ellerman.org/the-math-of-double-entry-bookkeeping-part-ii-vectors/

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 Report*[18]. 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*[19], 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.

Again, all of this is put into machine-readable form[20] and documented as described above.

Further, the general journal entries level is also prototyped in machine-readable form[21].

Financial Reporting Schemes

A financial reporting scheme is any general purpose or special purpose reporting scheme that has double-entry accounting and the accounting equation at its foundation. There are numerous financial reporting schemes[22]. Each standards setter creates a conceptual framework that is used to both create and understand the financial reporting scheme they have established. Each of the conceptual frameworks outlines a set of "elements of financial statements[23]" that are used as a foundation and

[18] Charles Hoffman, CPA, *Leveraging the Theoretical and Mathematical Underpinnings of a Financial Report*, http://xbrlsite.azurewebsites.net/2018/Library/TheoreticalAndMathematicalUnderpinningsOfFinancialReport.pdf#page=6
[19] Charles Hoffman, CPA, *General Ledger Trial Balance to External Financial Report*, http://xbrlsite.azurewebsites.net/2018/RoboticFinance/TrialBalanceToReport.pdf
[20] Trial Balance, http://xbrlsite.azurewebsites.net/2019/Core/core-trialbalance/
[21] Journal, http://xbrlsite.azurewebsites.net/2019/Core/core-journal/
[22] Charles Hoffman, CPA, *Comparison of Financial Reporting Schemes*, http://xbrlsite.azurewebsites.net/2018/Library/ReportingSchemes-2018-12-30.pdf
[23] Charles Hoffman, CPA, Comparison of Elements of Financial Statements, http://xbrlsite.azurewebsites.net/2019/Core/ElementsOfFinancialStatements.pdf

connect to the three foundational elements of the accounting equation: assets, liabilities, equity. Here are a few financial reporting schemes:

- **US GAAP**: United States generally accepted accounting principles published by the Financial Accounting Standards Board[24].
- **IFRS**: International Financial Reporting Standards published by the International Accounting Standards board[25].
- **GAS**: Governmental Accounting Standards published by the Governmental Accounting Standards Board in the US[26].
- **IPSAS**: International Public Sector Accounting Standards published by the International Public Sector Accounting Standards Board.
- **FRF for SMEs**: Financial Reporting Framework for Small- and Medium- sized Enterprises published by the American Institute of Certified Public Accountants (AICPA) in the US[27].
- **AAS**: Australian Accounting Standards published by the Australian Accounting Standards Board which is synchronized with IFRS[28].
- **FAS**: Federal Accounting Standards which is used by the United States Federal Government and published by the Federal Accounting Standards Advisory Board.

Essentially, each of these reporting schemes can be reconciled to the accounting equation. Although their fundamental elements of a financial statement per a scheme may use different terms; each has a set of terms and that set of terms is interrelated in very specific ways. All of this can be put into machine-readable form both to document and prove the logical system.

Analyzing the 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

[24] US GAAP (SFAC 6), http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/
[25] IFRS, http://xbrlsite.azurewebsites.net/2019/Core/core-ifrs/
[26] GAS, http://xbrlsite.azurewebsites.net/2019/Core/core-gas/
[27] FRF for SMEs, http://xbrlsite.azurewebsites.net/2019/Core/core-frfsme/
[28] AAS, http://xbrlsite.azurewebsites.net/2019/Core/core-aas/

- Expenses
- Gains
- Losses

The FASB uses the analogy of a "photograph" and a "motion picture" to differentiate the two types of elements[29]. 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[30].

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 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[31]. 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.

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

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.

[29] FASB, SFAC 6, page 21, paragraph 20
[30] FASB, SFAC 6, page 21, paragraph 20
[31] FASB, SFAC 6, page 21 and 22, paragraph 21

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

Shell of a statement of financial position (balance sheet)[32]:

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)[33]:

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:

[32] Human readable rendering of balance sheet, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/evidence-package/contents/index.html#Rendering-BS-Implied.html
[33] Human readable rendering of comprehensive income statement, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/evidence-package/contents/index.html#Rendering-IS-Implied.html

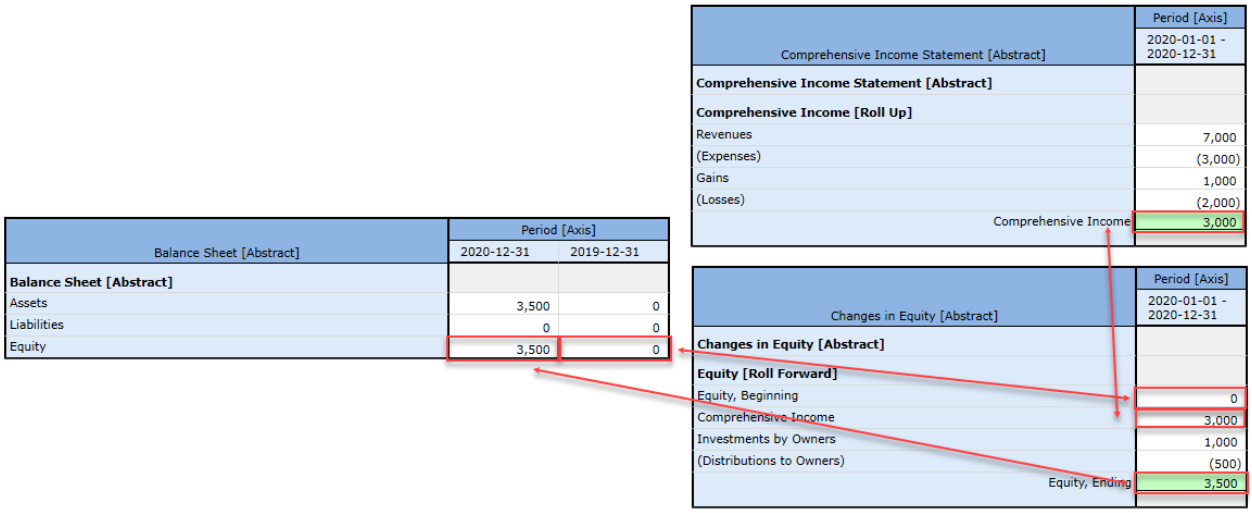
Changes in Equity [Abstract]	Period [Axis] 2020-01-01 - 2020-12-31
Changes in Equity [Abstract]	
Equity [Roll Forward]	
Equity, Beginning	0
Comprehensive Income	3,000
Investments by Owners	1,000
(Distributions to Owners)	(500)
Equity, Ending	3,500

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:



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[34]:

#	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.

Limitations of SFAC 6 and Other Element of Financial Statement Definitions

Because there are so few specific elements of a financial statement defined by the conceptual frameworks of a financial reporting scheme and because the element definitions do not include definitions of the structures into which the elements of a financial report fit; I have created an enhanced set of common financial statement elements and common financial statement structures[35].

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

[35] Common Elements of Financial Statements (MASTER), http://xbrlsite.azurewebsites.net/2019/Core/master-elements/

Synthesizing a Set of Common Elements of Financial Statement

In order to better create a full set of financial statements it is important to further enhance the core elements of a financial statement with a few more details. As such, the additional core elements were added to this model:

- Current Assets
- Noncurrent Assets
- Current Liabilities
- Noncurrent Liabilities
- Equity Attributable to Controlling Interests
- Equity Attributable to Noncontrolling Interests
- Liabilities and Equity
- Net Cash Flow
- Net Cash Flow from Operating Activities
- Net Cash Flow from Investing Activities
- Net Cash Flow from Financing Activities
- Net Assets
- Net Income
- Income from Ordinary Activities of Entity
- Income from Peripheral or Incidental Transactions of Entity
- Other Comprehensive Income

With these additional elements of a financial statements it is possible to create the four primary financial statements such that they resemble at least shell statements.

Synthesizing a Set of Common Structures of Financial Statements

Given the 26 common elements of a financial statement, there are six structures that are apparent.

- Statement of Financial Position (Balance sheet)
- Statement of Financial Performance (Income Statement)
- Statement of Cash Flow

- Statement of Changes in Equity
- Statement of Comprehensive Income
- Statement of Net Assets

These structures are explicitly defined in this model.

Four Statement Model with Shell Statements

As such, we can now create the four statements that make up a set of financial statements. Note that these are not yet intended to resemble actual financial statements. Rather, the purpose of this step is simply to show the connections between the four statements.

Statement of Financial Position (Balance sheet):

Balance Sheet [Abstract]	Period [Axis]	
	2020-12-31	2019-12-31
Balance Sheet [Abstract]		
Assets [Roll Up]		
Current Assets	3,500	0
Noncurrent Assets	0	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 Interest	3,500	0
Equity Attributable to Noncontrolling Interest	0	0
Equity	3,500	0
Liabilities and Equity	3,500	0

Statement of Financial Performance (Comprehensive income):

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

Statement of Cash Flow:

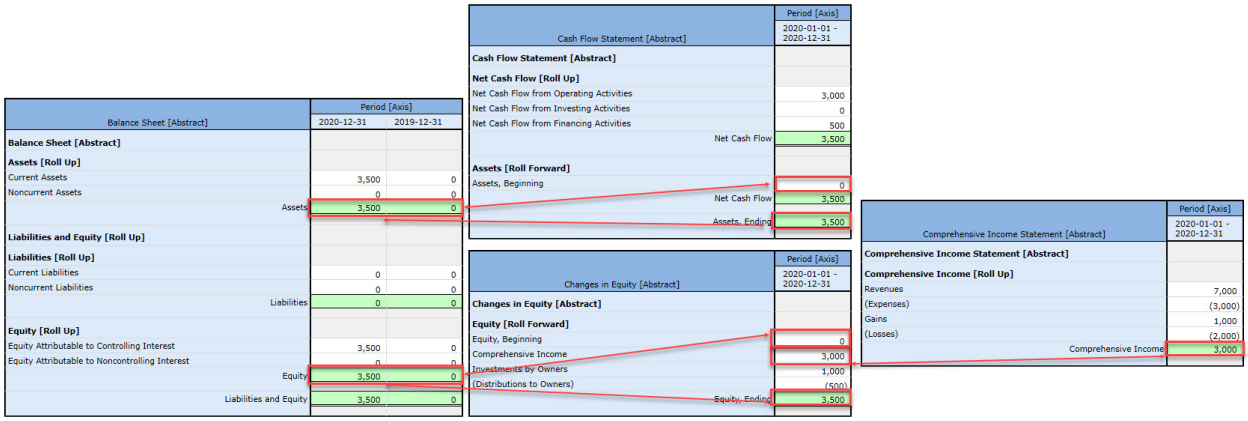
Cash Flow Statement [Abstract]	Period [Axis] 2020-01-01 - 2020-12-31
Cash Flow Statement [Abstract]	
Net Cash Flow [Roll Up]	
Net Cash Flow from Operating Activities	3,000
Net Cash Flow from Investing Activities	0
Net Cash Flow from Financing Activities	500
Net Cash Flow	3,500
Assets [Roll Forward]	
Assets, Beginning	0
Net Cash Flow	3,500
Assets, Ending	3,500

Note that on a cash flow statement normally the roll forward is for Cash and Cash Equivalents. As we are not yet down to that level of detail, we are using Assets to provide the roll forward.

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

The four statements above show the details of the statement line items; the graphic below shows the interrelationships between the four primary financial statements:



Balance Sheet [Abstract]	Period [Axis] 2020-12-31	2019-12-31
Balance Sheet [Abstract]		
Assets [Roll Up]		
Current Assets	3,500	0
Noncurrent Assets	0	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 Interest	3,500	0
Equity Attributable to Noncontrolling Interest	0	0
Equity	3,500	0
Liabilities and Equity	3,500	0

Cash Flow Statement [Abstract]	Period [Axis] 2020-01-01 - 2020-12-31
Cash Flow Statement [Abstract]	
Net Cash Flow [Roll Up]	
Net Cash Flow from Operating Activities	3,000
Net Cash Flow from Investing Activities	0
Net Cash Flow from Financing Activities	500
Net Cash Flow	3,500
Assets [Roll Forward]	
Assets, Beginning	0
Net Cash Flow	3,500
Assets, Ending	3,500

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

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 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:

id	satisfied	message
ASSERTION_elements_Equality_AccountingEquation (evaluation 1)	satisfied	$Assets=0 = $Liabilities=0 + $Equity=0
ASSERTION_elements_Equality_AccountingEquation (evaluation 2)	satisfied	$Assets=3500 = $Liabilities=0 + $Equity=3500
ASSERTION_elements_Equality_AccountingEquation_NetAssetsApproach (evaluation 1)	satisfied	$NetAssets=0 = $Assets=0 - $Liabilities=0
ASSERTION_elements_Equality_AccountingEquation_NetAssetsApproach (evaluation 2)	satisfied	$NetAssets=3500 = $Assets=3500 - $Liabilities=0
ASSERTION_elements_ROLLUP_ComprehensiveIncome (evaluation 1)	satisfied	$ComprehensiveIncome=3000 = ($Revenues=7000 + $Gains=1000 - $Expenses=3000 - $Losses=2000)
ASSERTION_elements_ROLLFORWARD_Equity (evaluation 1)	satisfied	$Equity_BalanceStart=0 + $ComprehensiveIncome=3000 + $InvestmentsByOwners=1000 - $DistributionsToOwners=500 = $Equity_BalanceEnd=3500
ASSERTION_elements_ROLLFORWARD_Assets (evaluation 1)	satisfied	$Assets_BalanceStart=0 + $NetCashFlow=3500 = $Assets_BalanceEnd=3500
ASSERTION_elements_CONCEPTUAL_FRAMEWORK_RECONCILATION (evaluation 1)	satisfied	0= (($Equity_BalanceStart=0 + (($Revenues=7000 - $Expenses=3000) + ($Gains=1000 - $Losses=2000)) + ($InvestmentsByOwners=1000 - $DistributionsToOwners=500)) + ($Liabilities_BalanceEnd=0 - $Assets_BalanceEnd=3500))

This verifies that the XBRL-based report and the logical relations articulated via that report are as would be expected. Further, other structures that are not part of the four common statements also proven to be correct and do not conflict with or contradict the four core financial statements.

Shell of the Financial Report Logical System

The double-entry accounting model, the accounting equation, and my *Core Elements of Financial Statements (MASTER)*[36] forms a logical core of a digital financial statement. That definition is provided in both human-readable terms and machine-readable terms. A financial statement is a logical system[37].

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".
    - **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

[36] Core Elements of Financial Statements (MASTER), http://xbrlsite.azurewebsites.net/2019/Core/master-elements/
[37] Charles Hoffman, CPA, *Understanding and Expressing Logical Systems*, http://xbrl.squarespace.com/journal/2019/9/25/understanding-and-expressing-logical-systems.html

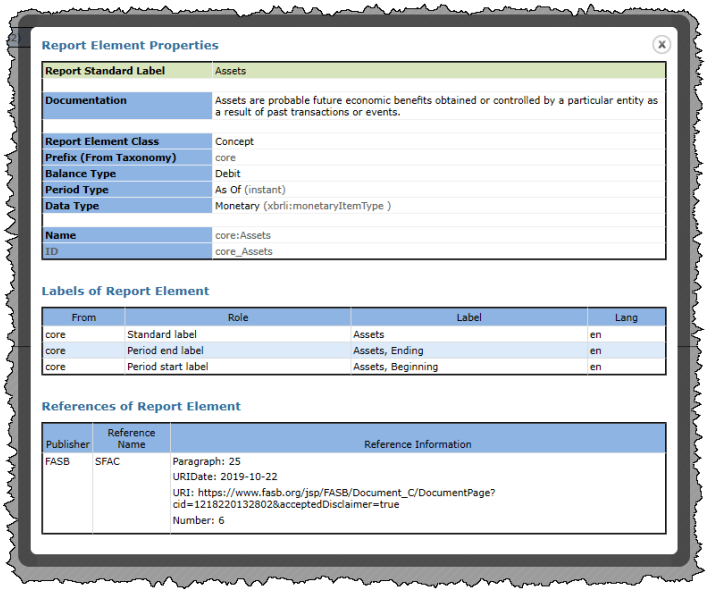
information in a logical system has been represented relative to the reality for a universe of discourse.

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

TERMS[38]:

#	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.[39]:



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[40,41]:

[38] Machine-readable terms, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/core.xsd
[39] Human-readable term, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/term.jpg
[40] Machine-readable associations, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/core-presentation.xml
[41] Human-readable associations, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/evidence-package/contents/index.html#Rendering-IS-Implied.html

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[42,43]:

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[44,45]:

[42] Machine-readable assertions, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/core-formula.xml
[43] Human-readable assertions, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/evidence-package/contents/index.html#BusinessRulesSummary.html
[44] Machine-readable facts, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/instance.xml
[45] Human-readable facts, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/evidence-package/contents/index.html#FactTableSummary.html

#	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[46,47]:

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”

[46] Machine-readable structures, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/core-presentation.xml
[47] Human-readable structures, http://xbrlsite.azurewebsites.net/2019/Core/core-sfac6/evidence-package/contents/index.html#RenderingSummary.html

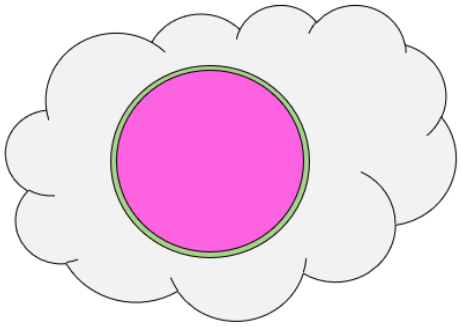
and “equity” is interpreted to be “assets = liabilities + equity”, there is our only interpretation provided for in this logical system.

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

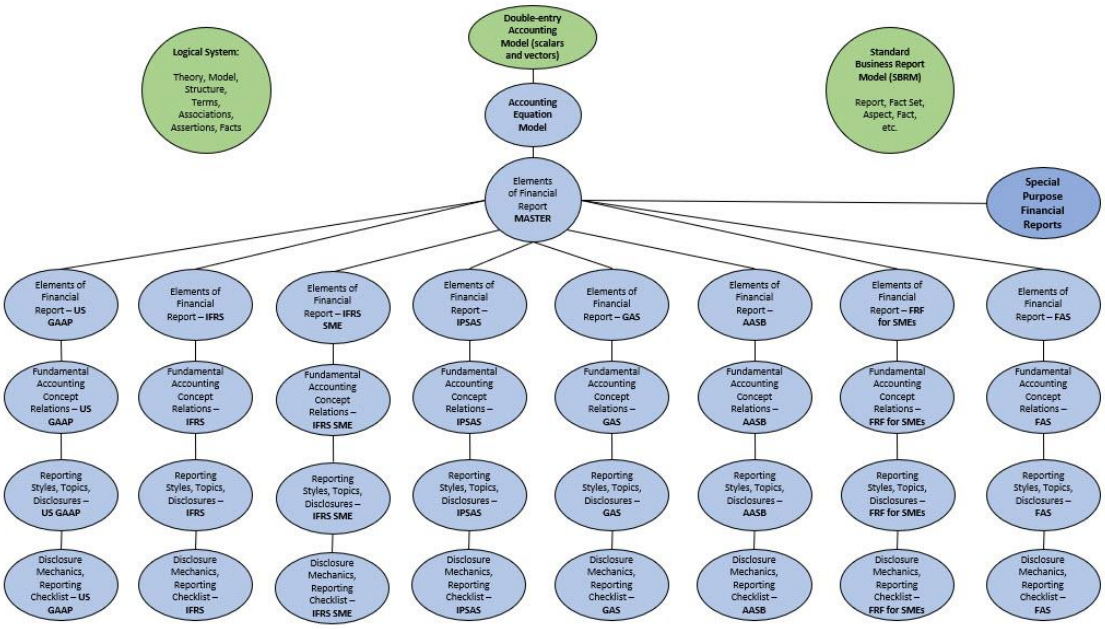
Showing this graphically below, the universe of discourse we are concerned with at the moment is only SFAC 6. That is represented by the GREEN circle. Because the logical representation has high precision, the representation in PINK is essentially the same size as GREEN showing that the coverage is appropriate. 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.



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.

Global Standard Digital Financial Report Framework

If you understand the notion of a logical system[48], if you understand the motivation behind OMG's *Standard Business Report Model (SBRM)*[49] and/or my *Open Source Framework for Implementing XBRL-based Digital Financial Reporting*[50] and you add that to the mathematical model of a financial report you begin to see the opportunity unfolding.



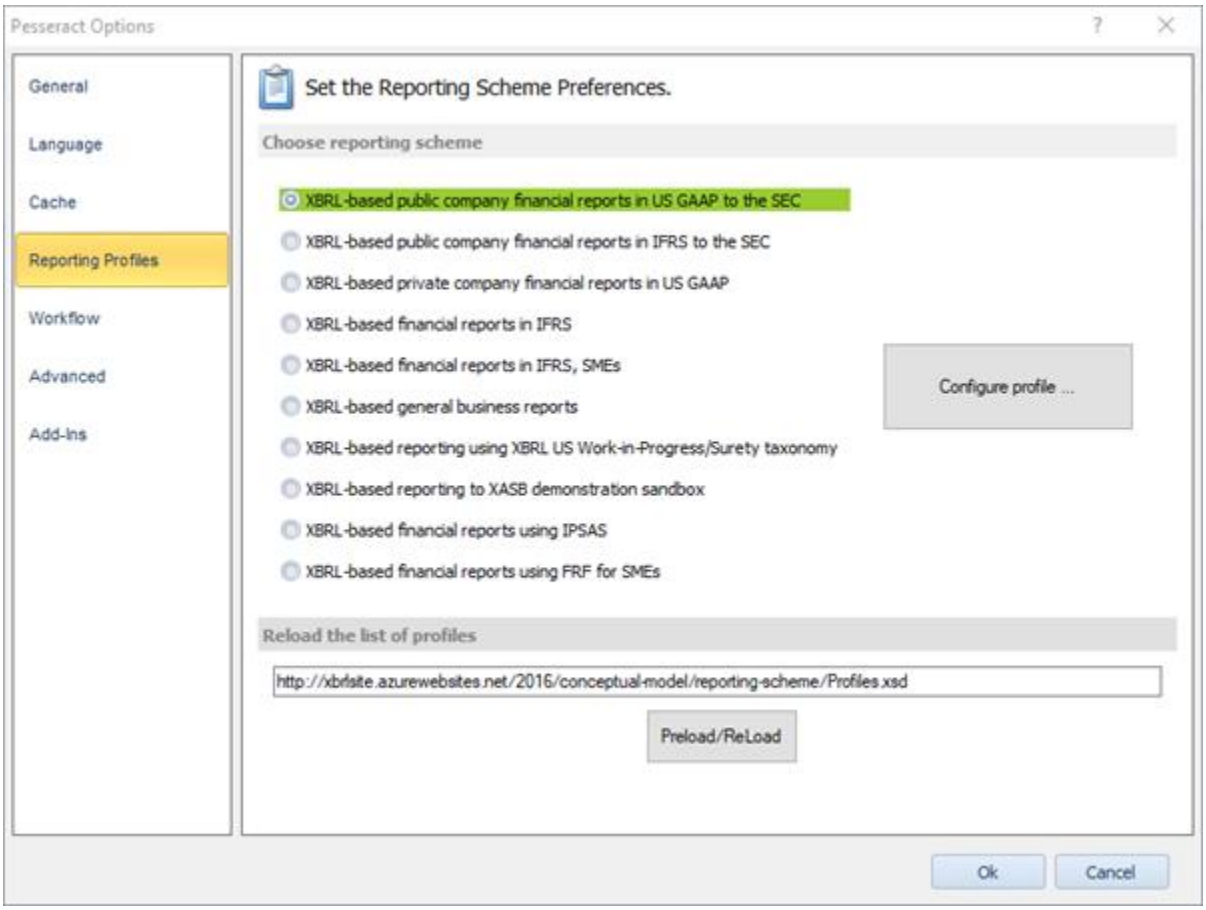
To me this looks like something similar to the human genome project so I am calling this my ***Financial Report Genome Project***.

This is not something that is a theoretical vision. This has been in the works for ten plus years and all of the pieces are in place and this already works within two different software applications that take advantage of the set of rules that exist: Pesseract[51] and XBRL Cloud[52]. So again, this is not a theoretical possibility; the advantages are clearly apparent.

[48] *Understanding and Expressing Logical Systems*, http://xbrl.squarespace.com/journal/2019/9/25/understanding-and-expressing-logical-systems.html
[49] *Understanding the Role of SBRM*, http://xbrl.squarespace.com/journal/2019/6/26/understanding-the-role-of-sbrm.html
[50] *Open Source Framework for Implementing XBRL-based Digital Financial Reporting*, http://xbrlsite.azurewebsites.net/2019/Framework/FrameworkEntitiesSummary.html
[51] Pesseract, http://pesseract.azurewebsites.net/#menu3
[52] XBRL Cloud, https://www.xbrlcloud.com/

Working Reporting Scheme Profiles

Currently, there are 10 different profiles supported by Pesseract in varying degrees:



Each reporting scheme[53] has a reporting profile[54]. A profile is an approach to managing the differences between implementations of a reporting scheme.

These differences have profound ramifications for professional accountants.

Differences in implementations of reporting schemes can be put into two categories:

- Unjustifiable and generally unconscious differences that tend to be unnecessary.
- Justifiable differences that are necessary.

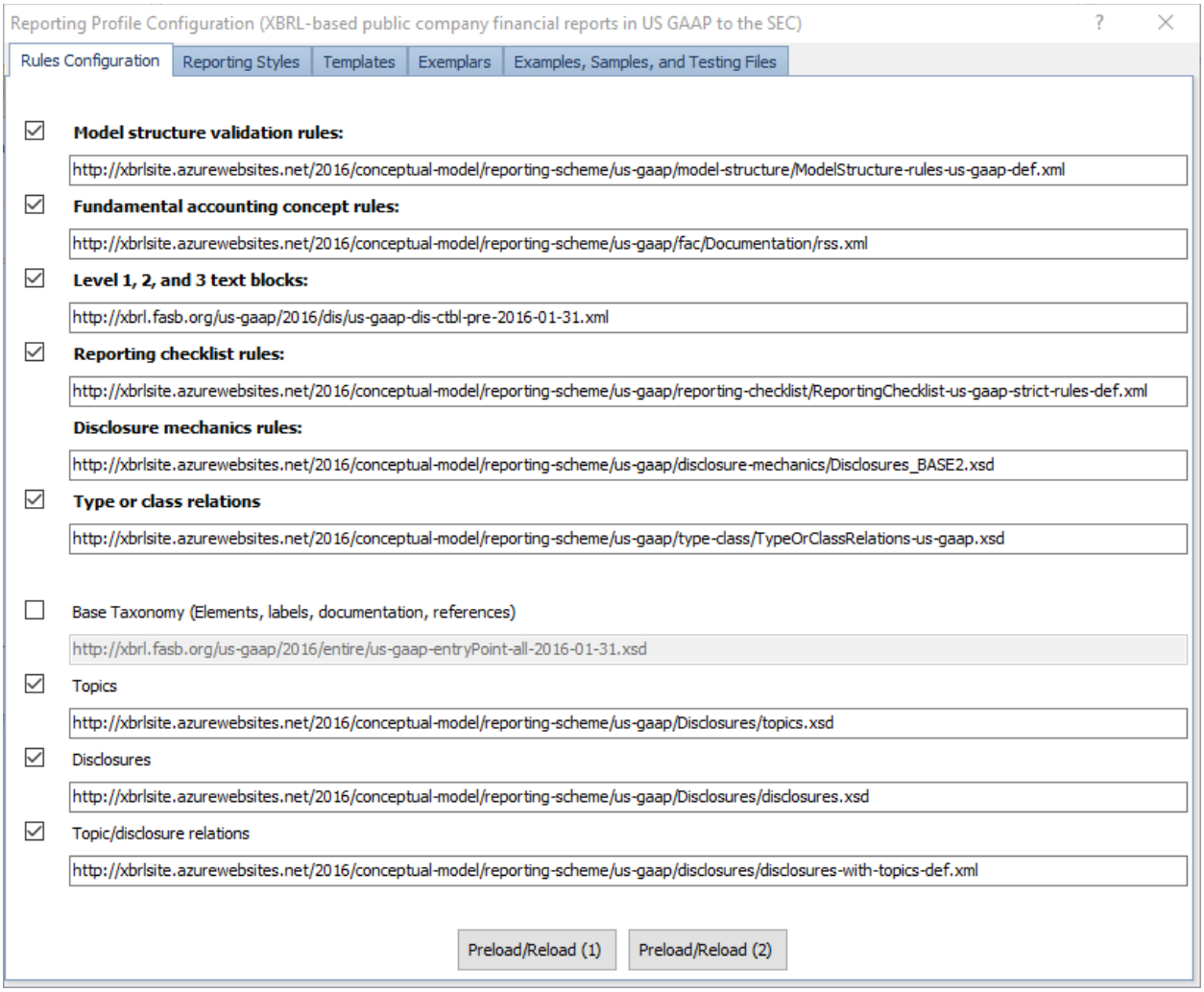
An example of a justifiable implementation difference is the entity identifier used by a reporting scheme. For example, the SEC uses a CIK number to identify a reporting economic entity.

[53] Reporting schemes, http://xbrlsite.azurewebsites.net/2018/Library/ReportingSchemes-2018-12-30.pdf
[54] Reporting Profiles, http://xbrlsite.azurewebsites.net/2018/Library/Profiles-2018-10-22.pdf

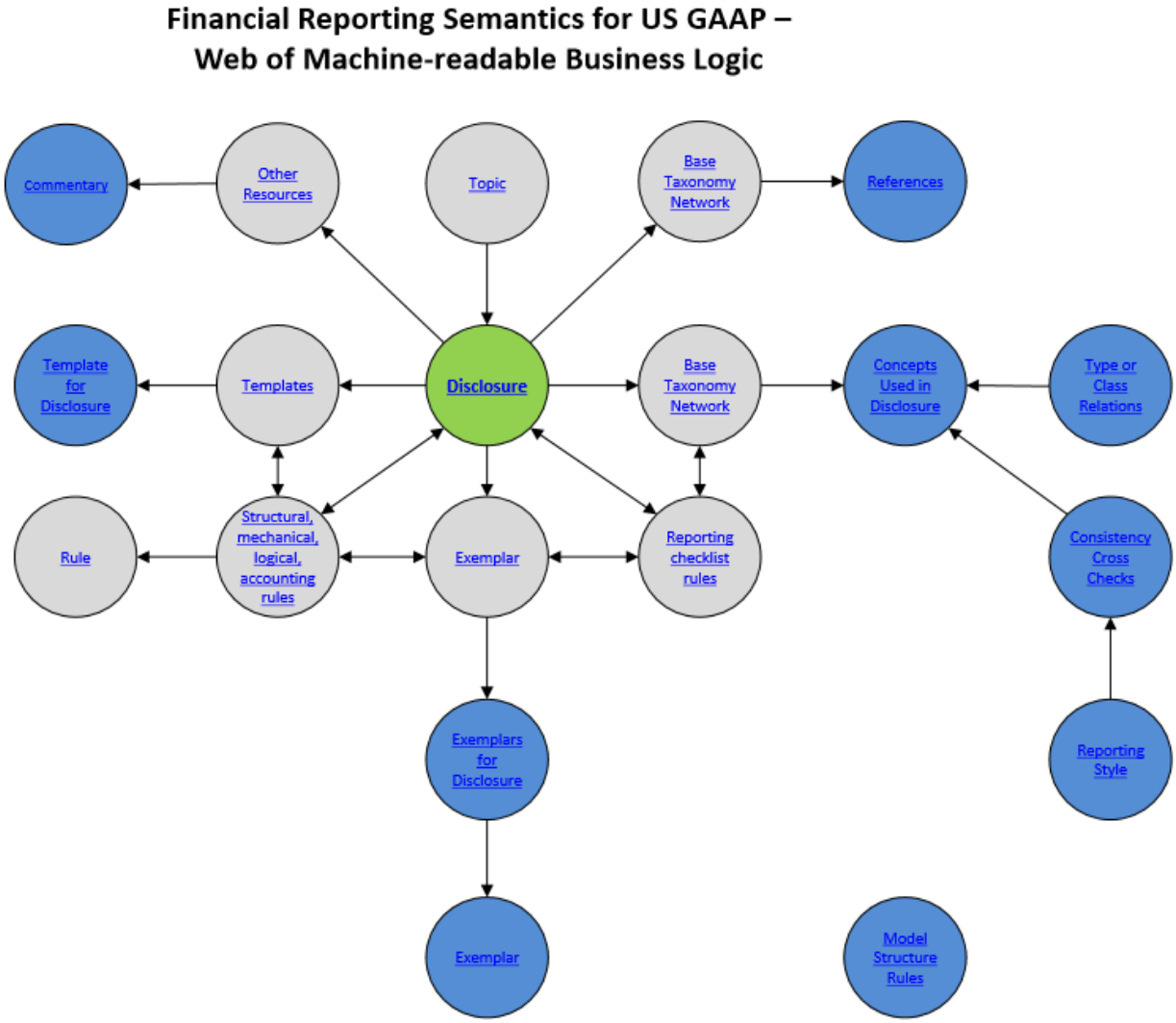
ESMA, on the other hand, uses a LEI to identify a reporting economic entity. Justification for the difference is perhaps the arbitrary personal preference of a regulator.

An example of an unjustifiable difference is the relationship between a [Table] and the [Line Items] of that table in the XBRL presentation relations of an XBRL taxonomy. The IFRS XBRL taxonomy uses one approach and the US GAAP XBRL Taxonomy uses a different approach. Interestingly, XBRL-based reports submitted to the U.S. SEC using US GAAP and IFRS tend to use the same approach to representing this relation. From an accounting or reporting perspective, what is the impact of the difference? ZERO. From the perspective of the user of a software application, what is the impact of the difference? Harder to use software. Users of software need to make a choice and software vendors creating software have to enable software users to make a choice. This small detail may seem trivial, but it is not trivial. It is one of hundreds of details that if left unattended to leads to the existing hard to use software applications.

Each profile has an extensive set of rules that drives software applications:



Software users never need to worry about configuration of the rules. This is all done within the bowels of software applications and is a detail that business professionals using software do not need to deal with. Here is another view of the extensive set of relations that exist for a financial reporting scheme[55],[56]:



The extensive set of related information provides a rich set of functionalities to business professionals using software. First, there is the very necessary functionality of appropriately verifying that the financial report logical system is truly properly functioning. An informed

[55] Machine-readable relations for US GAAP, http://xbrlsite.azurewebsites.net/2018/Prototypes/ModernFinancePlatform/ModernFinancePlatform_Web.pdf
[56] Human-readable relations for US GAAP, http://xbrlsite.azurewebsites.net/2018/Prototypes/ModernFinancePlatform/ModernFinancePlatform_HUMAN.pdf

creator of XBRL-based reports will not be fooled into complacency by a lack of machine-readable rules that point out errors in these complex financial reports.

Perhaps it is the case today that creators of reports do not need to care about errors because reports (a) are only submitted to regulators like the SEC that do not enforce quality rules and (b) the XBRL-based financial reports are not being audited[57]. Ultimately, XBRL-based financial reports will be audited. Make no mistake about that.

Machine-readable metadata exists for multiple reporting schemes including US GAAP, IFRS, IPSAS, XASB (which is used for testing), FRF for SMEs, and others are in the works. All of this machine-readable metadata can be seen as working proofs of concept and are in no way held out as being complete.

This curated metadata[58] will ultimately be a new currency used by professional accountants, auditors, analysts, and others. This machine-readable metadata that only a professional accountant can create, will supercharge accounting, reporting, auditing, and analysis processes. Here is an example of metadata used for reporting using the FRF for SMEs reporting scheme[59]:

[57] Charles Hoffman, CPA, *Auditing XBRL-based Financial Reports*, http://xbrlsite.azurewebsites.net/2019/Library/AudtingXBRLBasedFinancialReports.pdf
[58] Charles Hoffman, CPA, *Behold the Power of Metadata*, http://xbrl.squarespace.com/journal/2019/5/23/behold-the-power-of-metadata.html
[59] FRF for SMEs Ontology, http://xbrlsite.azurewebsites.net/2016/conceptual-model/reporting-scheme/frf-sme/documentation/Home.html

Variability Caused by Alternative Intermediate Components

Why is are all these rules necessary? The answer is variability. With flexibility comes responsibility. Financial statements are not, and never will be, forms. Financial reporting schemes such as US GAAP, IFRS, and pretty much all that I have mentioned in this paper are rich and complex and variability is consciously built into the financial report logical systems.

Specific variability is anticipated and allowed by financial reporting schemes such as US GAAP, IFRS, IPSAS, GAS, FAS, etc.[60] By far, the most variability that exists within a set of financial statements exists on the income statement. SFAS 6 discusses the notion of intermediate components[61] 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[62]. This variability is not random or completely arbitrary. Nor will illogical representations be tolerated by standards setters, regulators, or professional accountants that create or audit reports. 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 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[63]. This is all measurable.

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[60] Charles Hoffman, CPA, *Comparison of Elements of Financial Statements*, http://xbrlsite.azurewebsites.net/2019/Core/ElementsOfFinancialStatements.pdf
[61] FASB, SFAC 6, page 47, paragraph 77.
[62] Open Framework for Implementing XBRL-based Financial Reporting, *Reporting Styles*, http://xbrlsite.azurewebsites.net/2019/Framework/Details/ReportingStyle.html
[63] 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

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[64]. 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.

Conclusion

Make no mistake; the machines are coming[65]. But computers are dumb beasts that must be carefully led, step-by-step if they are to perform useful and meaningful work for professional accountants. Making all of this work is hard enough and adding additional hurdles such as unjustifiable differences between different reporting scheme implementations is just plain dumb really. Further, it is completely unnecessary.

But, to understand what is and what is not important is hard to understand if you look at the world before the digital era. We are in a new era. We need to learn to communicate with these new tools in new ways. If done right, software tools will increase the value of professional accountants. It may seem that toiling in the current salt mines of inefficient processes makes one feel valuable. But that is not real value and it is only valued because the work is necessary to meet regulatory obligations.

The real value is in the sorts of analysis that can only be performed by humans. Let computers do the toiling in the salt mines. To do that, help create one global standard financial report genome that will serve as a rock-solid foundation for accounting, reporting, auditing, and analysis for years to come.

[64] Charles Hoffman, CPA, Comparison of Elements of Financial Statement, http://xbrlsite.azurewebsites.net/2019/Core/ElementsOfFinancialStatements.pdf
[65] Charles Hoffman, CPA, *Artificial Intelligence and Knowledge Engineering Basics in a Nutshell*, http://xbrlsite.azurewebsites.net/2019/Library/KnowledgeEngineeringInNutShell.pdf