

Method - Terse Explanation

Good practices/best practices based method for creating a process control mechanism that consistently yields high-quality XBRL-based financial reports where the model can be “reshaped” or “altered” by report creators explained as briefly as is possible

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

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This document provides a terse explanation of a proven standard good practices method of implementing a standard digital financial report using the XBRL technical syntax leveraging the extensibility features of XBRL which follow the forthcoming *OMG Standard Business Report Model (SBRM)*¹. For additional details about this method please refer to *Understanding Method (Abridged)*².

Using this method, enterprises can reliably and effectively stream a high-quality machine-readable XBRL-based global standard knowledge graph of a complete, consistent, and provably correct general purpose financial statement. Further, an entire record-to-report process can be automated effectively. This method provides both the flexibility and the control necessary.

For more information on the examples represented in this document, please refer to *Mastering XBRL-based Digital Financial Reporting*³. It is highly advisable to read *Essence of Accounting*⁴ prior to tackling the information in this document as it will empower you with the appropriate perspective.

Control + Rules = Effective Automation (High Quality)

If a process cannot be controlled then the process simply cannot repeatedly and reliably output high-quality. If process output is not high-quality, automation cannot possibly be effective.

So, control of a process is necessary in order for the process to be effective. How do you control a process? You control a process using rules. Manual processes are controlled by rules that are read by humans. Automated processes are controlled by rules that are readable by both machines (i.e., to execute the process) and humans (i.e., to make sure the rules are right).

Who creates these machine-readable rules that are used to control processes that yield effective automation? Accountants must create these rules because the rules tend to be accounting oriented. Technical rules tend to relate to syntax and such technical rules can be hidden from business professionals. What is left is the business logic and accounting rules that are used to control information and control process workflow. As such, the creation of machine-readable rules must be “self-service”. Business professionals must be empowered to create, adjust, maintain, and otherwise manage the rules that are used to control and therefore effectively automate processes. Once you have the machine-readable rules, you need software that can process the rules; this is sometimes called a rules engine or reasoning engine or a

¹ *OMG, Standard Business Report Model (SBRM)*, <https://omgwiki.org/SBRM/doku.php>

² *Understanding Method (Abridged)*, http://xbrlsite.azurewebsites.net/2020/Library/UnderstandingMethod_Abridged.pdf

³ *Mastering XBRL-based Digital Financial Reporting*, <http://xbrlsite.azurewebsites.net/2020/master/>

⁴ *Essence of Accounting*, <http://xbrlsite.azurewebsites.net/2020/Library/EssenceOfAccounting.pdf>

semantic reasoner. We will get to that in a bit, but first let's be sure you have some critically important background understanding.

Method = Process Control Mechanism

This method of creating an XBRL-based digital financial report provides a **process control mechanism** explicitly designed to keep fundamental report quality extremely high. Rules provide the control. More rules can be added to the meta-model to expand the control mechanisms; but no set of rules can be removed from the system because if something is removed then the system is "incomplete" and errors can then slip through the system undetected. This method provides the control mechanisms that provide the foundational quality of an XBRL-based financial report upon which additional functionality will be built.

And so, everything provided by the method is necessary. Perhaps it could be argued that the method is not sufficient to guarantee quality in all areas that anyone can ever dream about having quality. That is not the objective of the method. The objective of the method is to provide the foundation, the key stones of a high quality financial report represented digitally using the XBRL technical format.

Financial Report Levels

To clearly and precisely understand XBRL-based digital financial reporting and the target level of this method, it helps to think of the spectrum of financial reports in terms of levels similar to how levels are helpful in understanding the capabilities of self-driving cars⁵.

The term "self-driving" means different things to different people so it makes it difficult to have a precise conversation about that topic. But breaking the description into a spectrum of descriptions is very helpful to the communication process.

This is similarly true for the levels of an XBRL-based digital financial report. Below we will break down a financial report into helpful levels⁶ that will enable a precise and clear discussion. We will provide a very brief description, a little bit of information, and a link to specific examples that instantiate a report per each specific level.

The marginal difference between each level is very helpful in providing the reader with a solid understanding of the different levels. Here is an overview of the levels related to financial

⁵ Truecar, The 5 Levels of Autonomous Vehicles, <https://www.truecar.com/blog/5-levels-autonomous-vehicles/>

⁶ Financial Report Levels, <http://xbrl.squarespace.com/journal/2021/4/5/financial-report-levels.html>

reporting as I see them beginning with the least functional in terms of both human and machine use of the information from with a financial report.

- **Level 0**: Not machine readable. *An example of Level 0 is a clay tablet, papyrus, or paper as the report medium.*
- **Level 1**⁷: Machine readable, nonstandard, structured for presentation. *PDF, HTML, or XHTML are examples of Level 1.*
- **Level 2**⁸: Machine readable, nonstandard, structured for meaning, no taxonomy (a.k.a. dictionary), no rules, no report model. *An XBRL-based report without an XBRL taxonomy schema, without XBRL relations and resources, and without XBRL Formulas is an example of Level 2.*
- **Level 3**⁹: Machine readable, global standard syntax, structured for meaning, with taxonomy (a.k.a. dictionary), incomplete rules, incomplete high-level report model. *An XBRL-based report with a XBRL taxonomy schema, with XBRL relations and resources, but without XBRL Formulas is an example of Level 3.*
- **Level 4**¹⁰: Machine readable, global standard syntax, structured for meaning, with taxonomy (a.k.a. dictionary), complete set of rules provided, incomplete high-level report model. *An XBRL-based report with a XBRL taxonomy schema, with XBRL relations and resources, and with XBRL Formulas that completely describes the report is an example of Level 4.*
- **Level 5**¹¹: Machine readable, global standard syntax, structured for meaning, with taxonomy (a.k.a. dictionary), complete set of rules provided, complete global standard high-level report model, yields PROVEN properly functioning system and UNDERSTANDABLE report information. *An XBRL-based report with all the characteristics of Level 4, plus consistency cross checks, type-subtype relations, consistent modeling of XBRL presentation relations, information that describes the correct representation of every disclosure within the report, and a reporting checklist that describes all required disclosures is an example Level 5.*
- **Level 6**: All of Level 5 PLUS blockchain-anchored XBRL to increase trust. *An XBRL-based report with all the characteristics of Level 5, plus information within a digital distributed ledger that assures no one has tampered with the report is an example of Level 6.*

⁷ Level 1 financial report example, <http://xbrlsite.azurewebsites.net/2021/reporting-scheme/proof/reference-level1/>

⁸ Level 2 financial report example, <http://xbrlsite.azurewebsites.net/2021/reporting-scheme/proof/reference-level2/>

⁹ Level 3 financial report example, <http://xbrlsite.azurewebsites.net/2021/reporting-scheme/proof/reference-level3/>

¹⁰ Level 4 financial report example, <http://xbrlsite.azurewebsites.net/2021/reporting-scheme/proof/reference-level4/>

¹¹ Level 5 financial report example, <http://xbrlsite.azurewebsites.net/2021/reporting-scheme/proof/reference-level5/>

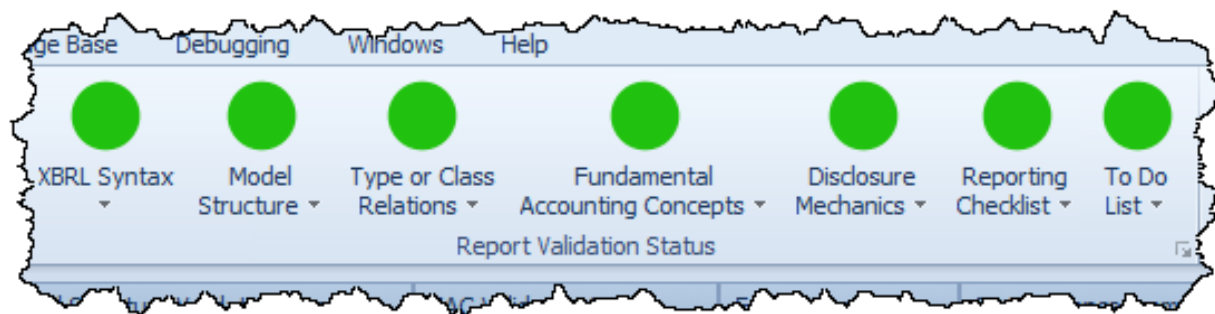
- **Level 7:** All of Level 6 PLUS blockchain-anchored accounting transactions and events. An XBRL-based report with all the characteristics of Level 6, plus information that indicates that assures no one has tampered with transactions is an example of Level 7.

The target of this method is Level 5 and above. Below Level 5 the functionality what we generally need from such reports in terms of quality and effective use of reported information in automated machine-based processes is not good enough. It is possible to create a Level 4 XBRL-based report that is properly functioning. Level 5 provides a guarantee that the Level 4 financial report is properly functioning within a provides specification articulated with a complete set of rules. Level 5 measures quality whereas Level 4 quality is essentially based on what amounts to luck or hope which are not effective engineering techniques.

Overview of Method

The following is a brief overview of the *Method of Implementing a Standard Financial Report Using the XBRL Syntax*¹². In this resource we will not explain the method. Rather, we will endeavor to provide a succinct and understandable basic understanding to help business professionals understand how the method works.

This graphic below provides somewhat of a “dashboard” for understanding this method and which shows a thorough and complete summary of the aspects tested using this method (i.e. nothing can be removed or quality issues could creep into the XBRL-based financial report representation):



If all the lights are green, then everything is working as would be expected. So, what is expected? The dashboard has seven categories that are explained as follows:

1. **XBRL Syntax**¹³: This category of rules is provided by XBRL International in the form of a machine-readable set of rules referred to as a conformance suite¹⁴. This conformance suite is 100%

¹² *Method of Implementing a Standard Financial Report Using the XBRL Syntax*, <http://www.xbrl.org/2020/Theory/SBRM-Method.pdf>

¹³ XBRL International, XBRL Conformance Suite, <https://specifications.xbrl.org/work-product-index-group-base-spec-base-spec.html>

¹⁴ XBRL International, XBRL 2.1, <https://specifications.xbrl.org/work-product-index-group-base-spec-base-spec.html>

automatable via computer-based processes and used to be sure the XBRL technical format is consistent with the expectations of the XBRL Technical specifications. The XBRL conformance suite has helped software vendors get their XBRL technical syntax consistent and today about 99.99% of all XBRL-based financial reports are consistent with expectation. But this checks only the information FORMAT, not the MEANING conveyed by the information expressed using that XBRL technical format. (Note that mathematical relations of a specific report are included in this category, represented by either XBRL calculation relations and/or XBRL formulas.)

2. **Model Structure**¹⁵: This category of rules overcomes missing information related to the relationship between the categories of report elements that are used to structure a financial report model. While the permissible sorts of XBRL calculation relations and XBRL definition relations and certain aspects of XBRL presentation relations are specified by the XBRL technical specification; information about the permissible associations between the categories of report elements as shown by the matrix below are not specified by XBRL. The model structure rules simply explicitly specify these rules for expressing XBRL presentation relations:

		Parent						
		Network	Table	Axis	Member	Line Items	Abstract	Concept
Child	Network	Illegal XBRL	Illegal XBRL	Illegal XBRL	Illegal XBRL	Illegal XBRL	Illegal XBRL	Illegal XBRL
	Table	OK	Disallowed	Disallowed	Disallowed	Disallowed	OK	Disallowed
	Axis	Disallowed	OK	Disallowed	Disallowed	Disallowed	Disallowed	Disallowed
	Member	Disallowed	Disallowed	OK	OK	Disallowed	Disallowed	Disallowed
	Line Items	Disallowed	OK	Disallowed	Disallowed	Disallowed	Disallowed	Disallowed
	Abstract	OK	Disallowed	Disallowed	Disallowed	OK	OK	Disallowed
	Concept	Disallowed	Disallowed	Disallowed	Disallowed	OK	OK	Disallowed

3. **Type-subtype relations**¹⁶: This category of rules specifies allowed subtype relations for each type defined in an XBRL taxonomy. Other terms for this are “is-a” relations or “general-special” relations or “wider-narrower” relations. An example would be a type-subtype rule that specifies that “Accounts Payable” is a sub type of the “Current Liabilities” type. This prevents the inadvertent use of “Accounts Payable” as, for example, a part of “Noncurrent Liabilities” or “Equity”, etc.
4. **Fundamental accounting concepts**¹⁷: This category of rules specifies information that helps detect common inconsistencies and contradictions within a financial report¹⁸. Consistency cross checks are created¹⁹ against expectation. There are many examples of the types of errors that

¹⁵ Model Structure rules, <http://xbrl.azurewebsites.net/2021/reporting-scheme/proof/model-structure/ModelStructure.html>

¹⁶ Type-subtype rules, http://xbrl.azurewebsites.net/2021/reporting-scheme/proof/type-subtype/type-subtype_ModelStructure.html

¹⁷ Fundamental accounting concepts, <http://xbrl.azurewebsites.net/2021/reporting-scheme/proof/fac/documentation/ConsistencyRulesList.html>

¹⁸ 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>

¹⁹ Consistency cross check rules, http://xbrl.azurewebsites.net/2019/Library/Signals_2019-03-31.jpg

have been known to commonly occur²⁰. For example, for US GAAP XBRL-based financial reports submitted to the SEC a common error was to use the concept “us-gaap:NoncurrentAssets” to represent information for which the concept “us-gaap:AssetsNoncurrent” should have been used.

5. **Disclosure mechanics**²¹: This category of rules is used to specify the permissible representations of each specific disclosure. For example, the disclosure “Components of Inventories” would be specified to be a “roll up” mathematical relation which uses the concept “us-gaap:InventoryNet” or a permissible alternative to represent that total. Disclosure mechanics rules likewise specify that the concept “us-gaap:ScheduleOfInventoriesTextBlock” should be used to represent the Level 3 disclosure text block disclosure.
6. **Reporting checklist**²²: This category of rules is used to specify the permissible sets of disclosures that are required to exist within a financial report. For example, the fact that a balance sheet is always required to be included can be specified, as would be the case for an income statement, statement of cash flow, and statement of changes in equity. The fact that a combined statement of comprehensive income and income could be used as an alternative can be specified. Finally, if a specific line item such as “Inventories” is provided on the balance sheet, the fact that an inventories policy and inventories disclosure must be provided can be specified.
7. **To do list**: This category of rules is for cases where either (a) a rule CANNOT be specified in machine-readable terms because the rules language used is not expressive enough to represent the rule or (b) a rule COULD have been represented but it simply HAS NOT been represented in machine-readable form and therefore manual work is necessary to verify report logic that could have been automated. Clearly it is advantageous to eliminate the membership in category (b) by defining machine readable rules where they can be effective.

Provably Complete, Consistent, Precise

And so, XBRL Syntax validation, category 1 above, provides only a small subset of what must be verified to be correctly represented within an XBRL-based financial report. Categories 2 through 6 must either be (a) also represented using machine-readable rules and therefore verifiable using automated processes or (b) verified using manual processes which are less reliable and therefore more prone to error. Category 7 must always be verified using manual processes.

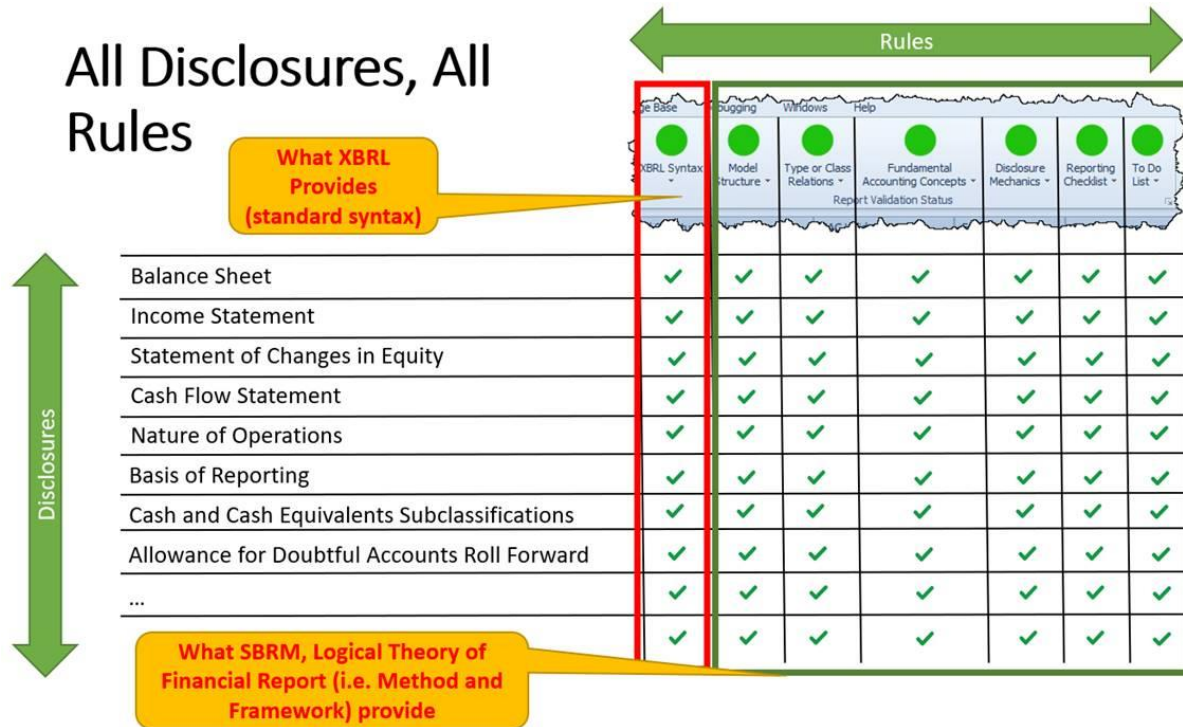
All verification, categories 1 through 7, must be performed for **each fragment** of an XBRL-based financial report to prove that each individual fragment is consistent, complete, and precise and that **any intersection between one report fragment** and some other report fragment is consistent (i.e., does not

²⁰ High-quality examples of errors, <http://xbrl.squarespace.com/journal/2017/4/29/high-quality-examples-of-errors-in-xbrl-based-financial-repo.html>

²¹ Disclosure mechanics rules, <http://xbrl.azurewebsites.net/2021/reporting-scheme/proof/disclosure-mechanics/DisclosureMechanicsRulesInNaturalLanguage.html>

²² Reporting checklist rules, <http://xbrl.azurewebsites.net/2021/reporting-scheme/proof/reporting-checklist/reporting-checklist-rules.html>

contradict or is not inconsistent with some other report fragment). The graphic below summarizes this visually:



Further, if 100% of the rule categories are specified for 100% of the disclosures that exist within an XBRL-based report; then a control mechanism is provided to verify that the financial information conveyed within an XBRL-based report is consistent with specified statutory and regulatory rules and other structural, mechanical, mathematical, and logical rules.

System specific rules such as the SEC Edgar Filer Manual rules or the ESMA's European Single Electronic Format (ESEF) are simply further restrictions and therefore additional rules; just another column in the grid above. Additional columns of rules can be added, but no columns can be removed.

For example, if one desired to add the XBRL US "Data Quality Checks", then a new column is simply added. Want to add a "spell checker"? That can be added also. But you simply cannot remove an existing column because then errors can slip into the system.

If such a control mechanism is provided; then as shown in *Effective Automation of Record to Report Process*²³ and as explained in *Understanding Digital*²⁴, accounting, reporting, auditing, and analysis tasks and processes can be automated to the degree that such rules exist to enable such automation. Humans (a) deal with exceptions and (b) perform any necessary manual checks. Further, when such processes

²³ Effective Automation of Record to Report Process, <http://xbrl.squarespace.com/journal/2020/11/3/effective-automation-of-record-to-report-process.html>

²⁴ Understanding Digital, <http://xbrl.azurewebsites.net/2020/Library/UnderstandingDigital.pdf>

leverage Lean Six Sigma philosophies and techniques²⁵, financial report quality can be controlled (as contrast to making mistakes and then spending hours and hours of human effort to detect and correct errors).

The best way to understand the need for this method and the process control mechanisms that it provides is to understand the impediments to creating a properly functioning logical system. We do that in a later section below by looking at the impediments to properly functioning logical systems. But before we do that we want to start with a small report and build up to larger and larger reports so you can get a sense of how this method actually works.

Remember the following. Control is achieved by using rules. Rules guarantee high-quality. High quality results in effective automation. Because the method is thorough and complete, processes can be effectively automated. How exactly can you be sure your financial report is a true and fair representation of the financial position and financial performance of your entity without testing it to be sure the report is working effectively? If you cannot measure it, you cannot control it.

Process automation and automated verification reduces the risk of noncompliance. Hope and chance are not good strategies for complying with statutory and regulatory reporting rules.

Being able to effectively exchange information between processes which enables the automation of those processes provides social benefit. Among those benefits are cost reduction, process quality improvement, ability to provide new products/services, and improved functioning of capital markets resulting from these process improvements.

So, we will start small and explain step-by-step how this method works. We will start with a tiny financial report where we represent the apex of double entry accounting, the accounting equation.

Accounting Equation

The accounting equation represents the fundamental model of double entry accounting: $\text{Assets} = \text{Liabilities} + \text{Equity}$. This implies three terms: Assets, Liabilities, Equity. A report created to represent the accounting equation in the form of an XBRL-based digital financial report would include:

- Three terms: Assets, Liabilities, Equity
- One structure: Balance Sheet
- Three associations: Assets is part of a Balance Sheet; Liabilities is part of a Balance Sheet; Equity is part of a Balance Sheet.
- One rule: $\text{Assets} = \text{Liabilities} + \text{Equity}$
- Three facts: Assets of 5000; Liabilities of 1000; Equity of 4000

²⁵ Lean Six Sigma, http://www.xbrlsite.com/mastering/Part01_Chapter02.K_LeanSixSigma.pdf

There are other unimportant details that you could deal with but which we will ignore here such as labels, languages, currency units, and so forth. All of these details are handled by XBRL and the examination of a detailed example can help you understand those details²⁶.

Our focus is on a higher. We want to help you see that a report is made up of blocks of information, that disclosures are represented using these blocks of information, and that you can determine whether your report contains all the required disclosures represented by the blocks of information.

Visually, this is what our tiny accounting equation report would look like in an application that can load such an XBRL-based digital financial report:

The screenshot shows an XBRL viewer interface. On the left, there's a 'Components (1)' pane with 'Component View' selected. Below it are filter options and a search box. The 'Component Properties' pane shows details for '01-Balance Sheet'. The main area displays a table for 'Balance Sheet [Arithmetic]' for the period '2019-12-31'. The table has three rows: Assets (5,000), Liabilities (1,000), and Equity (4,000).

The following provides a summary of the details we will be focusing on from an XBRL-based financial report. We will be focusing on these specific details in the other report examples as we build up to what an accountant would consider to be a real example of a financial report.

Information Blocks:

The screenshot shows a 'Blocks (1)' pane with a single green block labeled 'Balance Sheet [Arithmetic]'.

Disclosures:

Primary Information									
#	Disclosure	Category	Level	Pattern	Disclosure Found	Disclosure Consistent	Applicable	Representation Concept [TEXT BLOCK]	Representation Concept DETAIL
1	Balance Sheet	Unknown	Level4Detail	Hierarchy	True	CONSISTENT	True	NOT-EXPECTED	Assets

Reporting checklist:

#	Disclosure	Checklist Category	Reason Disclosure Must Exist	Discovered	Expectation Met	Link to Disclosure Mechanics
0	Reporting Checklist					
1	Balance Sheet	Required disclosure	Disclosure always required	True	CONSISTENT	Balance Sheet

²⁶ Accounting Equation represented using XBRL, <http://xbrlsite.azurewebsites.net/2020/master/ae/index.html>

We are going to take the time to describe what you should be focusing on as you proceed through the coming examples. The objective is to see and understand the similarities, or patterns, that exist for each of these small reports and also for the larger “real” XBRL-based digital financial report.

In this accounting equation example, we see that:

- We have one information block, “Balance Sheet [Arithmetic]”
- That single information block is used to represent the one disclosure in this example, “Balance Sheet” disclosure.
 - This disclosure follows the mechanical rules for representing that disclosure using the XBRL technical syntax.
- The reporting checklist specifies that the disclosure “Balance Sheet” is required to exist.

All of the above is enforced using XBRL-based machine-readable rules that, when processed by a logic/rules/reasoning engine, can determine if a block of information is properly functioning.

Our focus here is not on those rules or how the rules are processed. Our focus is on the blocks of information; that each block of information can be verified to be properly functioning, complete, and precise; and that if we can do this for one block of information then the same technique can be applied to other blocks of information in a similar manner.

The accounting equation example has exactly one block of information that is used to represent one disclosure that is the one required fragment that needs to exist within this tiny financial report we have specified as the accounting equation. But let’s now expand our example slightly.

SFAC 6

SFAC 6 represents the *Elements of Financial Statements*²⁷ defined by the FASB in SFAC 6. SFAC 6 builds on the accounting equation and adds a handful of additional elements. The elements are: Assets, Liabilities, Equity, Comprehensive Income, Revenues, Expenses, Gains, Losses, Investments by Owners, Distributions to Owners. The 10 elements are organized into three structures: Balance sheet, Comprehensive Income, Changes in Equity. There are three rules that describe the mathematical relationships of the elements: Assets = Liabilities + Equity; Comprehensive Income = Revenues - Expenses + Gains - Losses; $Equity^{T1} = Equity^{T0} + Comprehensive\ Income + Investments\ by\ Owners - Distributions\ to\ owners$.

We are not going to explain all the details, but will rather focus on the specific details which help the reader see the patterns we are pointing out.

Balance Sheet [Line Items]	2020-12-31	2019-12-31
Balance Sheet [Arithmetic Expression]		
Assets	3,500	0
Liabilities	0	0
Equity	3,500	0

Information Blocks:

Disclosure mechanics:

Show more information									
Primary Information									
#	Disclosure	Category	Level	Pattern	Disclosure Found	Disclosure Consistent	Applicable	Representation Concept [TEXT BLOCK]	Representation Concept DETAIL
1	Balance Sheet	Unknown	Level#Detail	Hierarchy	True	CONSISTENT	True	NOT-EXPECTED	Assets
2	Changes in Equity	Unknown	Level#Detail	RollForward	True	CONSISTENT	True	NOT-EXPECTED	Equity
3	Comprehensive Income	Unknown	Level#Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Comprehensive Income

Reporting checklist:

²⁷ SFAC 6 representation, <http://xbrlsite.azurewebsites.net/2020/master/sfac6/index.html>

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#	Disclosure	Checklist Category	Reason Disclosure Must Exist	Discovered	Expectation Met	Link to Disclosure Mechanics
0	Reporting Checklist					
1	Balance Sheet	Required disclosure	Disclosure always required	True	CONSISTENT	Balance Sheet
2	Comprehensive Income	Required disclosure	Disclosure always required	True	CONSISTENT	Comprehensive Income
3	Changes in Equity	Required disclosure	Disclosure always required	True	CONSISTENT	Changes in Equity

We do want to introduce the notion of articulation, the fact that the three disclosures provided are intentionally and inextricably linked together:

Balance Sheet [Line Items]		Period [Axis]	
		2020-12-31	2019-12-31
Balance Sheet [Arithmetic Expression]			
Assets		3,500	0
Liabilities		0	0
Equity		3,500	0

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

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

The point here is that we have three information blocks as contrast to the one of the first example, we have three disclosures as contrast to the one of the first example, and that all three disclosures are intentionally mathematically interconnected.

Our tiny financial report is growing! Let us now grow it some more.

Common Elements of Financial Statement

The common elements of financial statements builds on SFAC 6 by adding a hand full of additional report elements which enables the construction of a more recognizable balance sheet and adds report elements for a cash flow statement.

In addition, this example highlights the notion that different economic entities creating financial reports might use different structures to represent reported information. For example, a for profit economic entity would likely use a “Balance Sheet” whereas a not-for-profit economic entity might use a “Statement of Net Assets”.

While different economic entities might report using different styles of information structures; each disclosure can be represented as a specific block of information which has specific mechanical, mathematical, logical, and other such relations. But fundamentally, they are blocks of information; only different blocks of information.

And so, a financial report that would represent the common elements of a financial statement might look something like the following²⁸:

The screenshot shows a software interface with a left-hand navigation pane and a main table area. The navigation pane lists various components like '01-Balance Sheet', '02-Net Assets', etc. The main table area displays a balance sheet for 'GH259400TOMPULS65II' in USD, comparing 2020-12-31 and 2019-12-31. The table is structured as follows:

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

Information Blocks:

The screenshot shows a list of information blocks in a software interface. The blocks are:

- Assets [Roll Up]
- Liabilities and Equity [Roll Up]
- Net Assets [Roll Up]
- Comprehensive Income [Roll Up]
- Comprehensive Income [Roll Up]
- Comprehensive Income [Roll Up]
- Assets Roll Forward [Roll Up] [Roll Forward]
- Net Cash Flow [Roll Up]
- Changes in Equity [Roll Forward]

Disclosure mechanics:

Primary Information										
#	Disclosure	Category	Level	Pattern	Disclosure Found	Disclosure Consistent	Applicable	Representation Concept [TEXT BLOCK]	Representation Concept DETAIL	
1	Assets Roll Forward	Unknown	Level4Detail	RollForward	True	CONSISTENT	True	NOT-EXPECTED	Assets	
2	Assets Roll Up	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Assets	
3	Balance Sheet	Unknown	UNKNOWN	Component	True	CONSISTENT	True	-	-	
4	Cash Flow Statement	Unknown	UNKNOWN	Component	True	CONSISTENT	True	-	-	
5	Changes in Equity	Unknown	Level4Detail	RollForward	True	CONSISTENT	True	NOT-EXPECTED	Equity	
6	Comprehensive Income	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Comprehensive Income	
7	Comprehensive Income 2	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Comprehensive Income	
8	Comprehensive Income 3	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Comprehensive Income	
9	Liabilities and Equity Roll Up	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Assets	
10	Net Assets Roll Up	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Net Assets	
11	Net Cash Flow Roll Up	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Net Cash Flow	

Reporting checklist:

²⁸ Common Elements of Financial Statement (Four Statement Model), <http://xbrlsite.azurewebsites.net/2020/master/common/index.html>

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#	Disclosure	Checklist Category	Reason Disclosure Must Exist	Discovered	Expectation Met	Link to Disclosure Mechanics
0	Reporting Checklist					
1	Balance Sheet	Required disclosure	Disclosure always required, satisfied by Assets Roll Up and Liabilities an...	True	CONSISTENT	Balance Sheet
2	Assets Roll Up	Part of disclosure	Satisfies Balance Sheet disclosure	True	CONSISTENT	Assets Roll Up
3	Liabilities and Equity Roll Up	Part of disclosure	Satisfies Balance Sheet disclosure	True	CONSISTENT	Liabilities and Equity Roll Up
4	Cash Flow Statement	Required disclosure	Disclosure always required, satisfied by Net Cash Flow Roll Up and Ass...	True	CONSISTENT	Cash Flow Statement
5	Net Cash Flow Roll Up	Part of disclosure	Satisfies Cash Flow Statement disclosure	True	CONSISTENT	Net Cash Flow Roll Up
6	Assets Roll Forward	Part of disclosure	Satisfies Cash Flow Statement disclosure	True	CONSISTENT	Assets Roll Forward
7	Comprehensive Income	Required disclosure	Disclosure always required	True	CONSISTENT	Comprehensive Income
8	Comprehensive Income 2	Required disclosure	Disclosure always required	True	CONSISTENT	Comprehensive Income 2
9	Comprehensive Income 3	Required disclosure	Disclosure always required	True	CONSISTENT	Comprehensive Income 3
10	Net Assets Roll Up	Possible disclosure	Disclosure is present	True	CONSISTENT	Net Assets Roll Up
11	Changes in Equity	Required disclosure	Disclosure always required	True	CONSISTENT	Changes in Equity

Articulation²⁹:

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

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

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

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

And so, the number of information blocks and disclosures continues to grow, but the patterns we see are exactly the same but are only increasing in volume.

Proof

In the subsequent examples, we take the information structures that are provided in the example and then represent them as an XBRL-based financial report. We have done this for the accounting equation, SFAC 6 Elements of Financial Statements, and the Common Elements of Financial Statements.

The PROOF representation takes the opposite approach.

The PROOF³⁰ example model was created by observing the full set of about 6,023 US GAAP based financial reports submitted to the SES and about 406 IFRS based financial reports submitted to the SEC, examining 100% of the information patterns we find and then combining all those information patterns into a single report we call PROOF.

As we will show, all the logical information artifacts we see in the PROOF representation can be leveraged to represent, say, the Microsoft 10-K financial report³¹. Likewise, these logical

²⁹ Common Elements of Financial Statement, Articulation, <http://xbrlsite.azurewebsites.net/2020/core/master-common/ArticulationFourStatementModel.jpg>

³⁰ Understanding Proof, <http://xbrlsite.azurewebsites.net/2020/Library/UnderstandingProof.pdf>

³¹ Microsoft Analysis, <http://xbrl.squarespace.com/journal/2020/4/13/microsoft-xbrl-based-report-analysis.html>

artifacts can be likewise used to represent the financial reports of Apple, Amazon, Google/Alphabet, Facebook, Salesforce³². Likewise, these logical artifacts are all that you need to represent any one of the 6,023 10-K financial reports which submits information using XBRL to the SEC using the US GAAP or IFRS financial reporting schemes³³.

Here is a summary of those logical artifacts:

financial reports submitted to the SEC by public companies:

- **Total reports:** 6,023
- **Total facts reported:** 8,532,275
- **Average facts per report:** 1,416
- **Total networks in all reports:** 462,786
- **Average networks per report:** 77
- **Total fact sets in all reports:** 754,430
- **Average fact sets per report:** 125
- **Average fact sets per network:** 1.6
- **Average facts per network:** 18
- **Average facts per fact set:** 11

Of the 754,430 fact sets there are:

- **Text blocks:** 407,392 (54%) are text blocks (Level 1 Notes, Level 2 Policies, Level 3 Disclosures)
- **Sets:** 181,063 (24%) are sets (or hierarchies, no mathematical computations)
- **Roll ups:** 120,708 (16%) are roll ups
- **Roll forwards:** 37,721 (5%) are roll forwards
- **Roll forward info:** 7,546 (1%) are roll forward infos or something else

If you want to have a look at some fact sets, see: [US GAAP](#) | [IFRS](#).

Similar results were achieved with another earlier analysis of 6,751 US GAAP based 10-K financial reports³⁴.

³² Software Companies Prototype, <http://xbrl.squarespace.com/journal/2020/4/2/software-companies-prototype.html>

³³ Breaking down the pieces, <http://xbrl.squarespace.com/journal/2019/4/9/breaking-down-the-pieces-of-an-xbrl-based-digital-financial.html>

³⁴ Analysis of 6,751 XBRL-based Public Company 10-Ks Submitted to SEC, http://www.xbrlsite.com/mastering/Part05_Chapter08.F_AnalysisOf675110Ks.pdf

Further, these logical artifacts that are used for US GAAP and IFRS will work for literally any other financial reporting scheme³⁵. A financial reporting scheme by definition (a) follows the rules of the double entry accounting model, (b) follows the rules of the accounting equation in some form, and (c) defines some set of elements of financial statements. And so, this very basic representation of SFAC 6 elements of financial statements³⁶ can be created for any financial reporting scheme; you simply use the terms and associations defined by that specific financial reporting scheme.

Finally, if I am incorrect and there is some other logical artifact that is necessary to represent financial reports from some other financial reporting scheme; that logical artifact simply needs to be added to the PROOF logical artifacts, explained the PROOF until it does meet that need.

And so, here are the logical artifacts of the PROOF representation³⁷:

The screenshot displays a software interface for financial reporting. On the left, a 'Components (9)' pane shows a tree view of components, with '01-Balance Sheet' selected. The main area on the right shows a 'Component: (Network and Table)' view. It includes a table for 'Balance Sheet [Arithmetic Expression]' with columns for '2020-12-31' and '2019-12-31'. The table rows are Assets (3,500, 0), Liabilities (0, 0), and Equity (3,500, 0). The interface also shows 'Reporting Entity [Axis]' as 'GH259400TOMPUOL565II' and 'Unit [Axis]' as 'USD'.

Balance Sheet [Line Items]	2020-12-31	2019-12-31
Assets	3,500	0
Liabilities	0	0
Equity	3,500	0

³⁵ Comparison of Financial Reporting Schemes,

<http://xbrlsite.azurewebsites.net/2020/master/ElementsOfFinancialStatements.pdf>

³⁶ SFAC 6 representation, <http://xbrlsite.azurewebsites.net/2020/master/sfac6-basic/>

³⁷ PROOF representation, <http://xbrlsite.azurewebsites.net/2020/master/proof/index.html>

Information Blocks:

Blocks (11)	
Balance Sheet [Arithmetic Expression] [Hierarchy]	
Comprehensive Income [Roll Up]	
Changes in Equity [Roll Forward]	
Prior Period Errors [Adjustment]	
Variance Analysis [Roll Up]	
Weighted Average Grant Date Fair Value [Roll Forward Info]	
Financial Highlights [Set] [Hierarchy]	
Basis of Reporting [Text Block]	
Nature of Operations [Text Block]	
Revenue Recognition Policy [Text Block]	
Segment Revenues [Set] [Hierarchy]	

Disclosures:

Primary Information									
#	Disclosure	Category	Level	Pattern	Disclosure Found	Disclosure Consistent	Applicable	Representation Concept [TEXT BLOCK]	Representation Concept DETAIL
1	Balance Sheet	Unknown	Level4Detail	Hierarchy	True	CONSISTENT	True	NOT-EXPECTED	Assets
2	Basis of Reporting	Unknown	Level1TextBlock	TextBlock	True	CONSISTENT	True	Basis of Reporting [Text Block]	NOT-EXPECTED
3	Changes in Equity	Unknown	Level4Detail	RollForward	True	CONSISTENT	True	NOT-EXPECTED	Equity
4	Financial Highlights	Unknown	Level4Detail	Hierarchy	True	CONSISTENT	True	NOT-EXPECTED	Revenues
5	Income Statement	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Comprehensive Income
6	Nature of Operations	Unknown	Level1TextBlock	TextBlock	True	CONSISTENT	True	Nature of Operations [Text Block]	NOT-EXPECTED
7	Prior Period Errors	Unknown	Level4Detail	Adjustment	True	CONSISTENT	True	NOT-EXPECTED	Equity
8	Revenue Recognitio...	Unknown	Level1TextBlock	TextBlock	True	CONSISTENT	True	Revenue Recognition Policy [Text Block]	NOT-EXPECTED
9	Segment Revenues	Unknown	Level4Detail	Hierarchy	True	CONSISTENT	True	NOT-EXPECTED	Revenues
10	Stock Plan Activity	Unknown	Level4Detail	RollForwar...	True	CONSISTENT	True	NOT-EXPECTED	Nonvested Fair Value
11	Variance Analysis	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Comprehensive Income

Reporting Checklist:

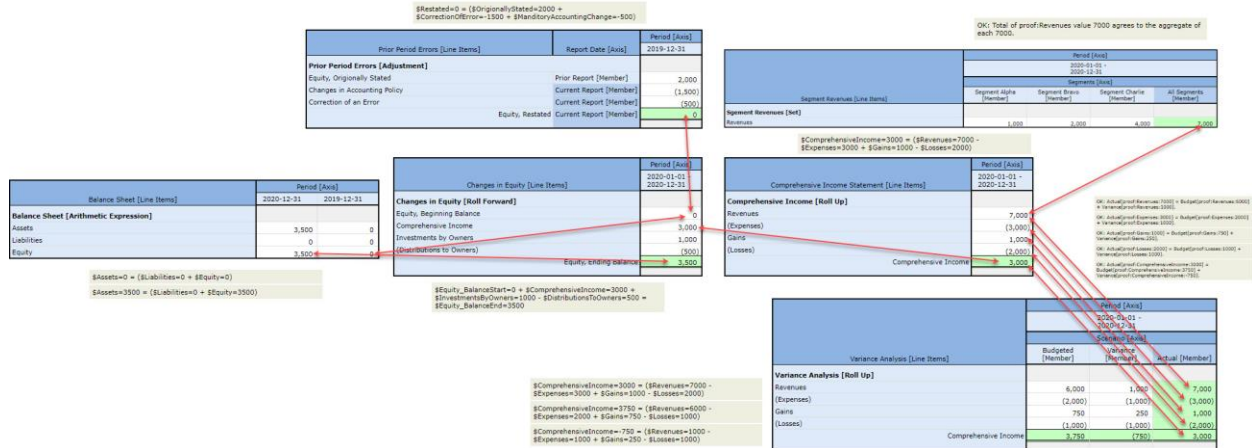
#	Disclosure	Checklist Category	Reason Disclosure Must Exist	Discovered	Expectation Met	Link to Disclosure Mechanics
0	Reporting Checklist					
1	Balance Sheet	Required disclosure	Disclosure always required	True	CONSISTENT	Balance Sheet
2	Income Statement	Required disclosure	Disclosure always required	True	CONSISTENT	Income Statement
3	Changes in Equity	Required disclosure	Disclosure always required	True	CONSISTENT	Changes in Equity
4	Financial Highlights	Possible disclosure	Disclosure is present	True	CONSISTENT	Financial Highlights
5	Prior Period Errors	Possible disclosure	Disclosure is present	True	CONSISTENT	Prior Period Errors
6	Variance Analysis	Possible disclosure	Disclosure is present	True	CONSISTENT	Variance Analysis
7	Segment Revenues	Possible disclosure	Disclosure is present	True	CONSISTENT	Segment Revenues
8	Stock Plan Activity	Possible disclosure	Disclosure is present	True	CONSISTENT	Stock Plan Activity
9	Basis of Reporting	Required disclosure	Disclosure always required	True	CONSISTENT	Basis of Reporting
10	Nature of Operations	Required disclosure	Disclosure always required	True	CONSISTENT	Nature of Operations
11	Revenue Recognition Policy	Required disclosure	Disclosure always required	True	CONSISTENT	Revenue Recognition Policy

Articulation³⁸:

³⁸ Proof, Articulation, <http://xbrlsite.azurewebsites.net/2020/master/proof/ProofMathematicalComputations.jpg>

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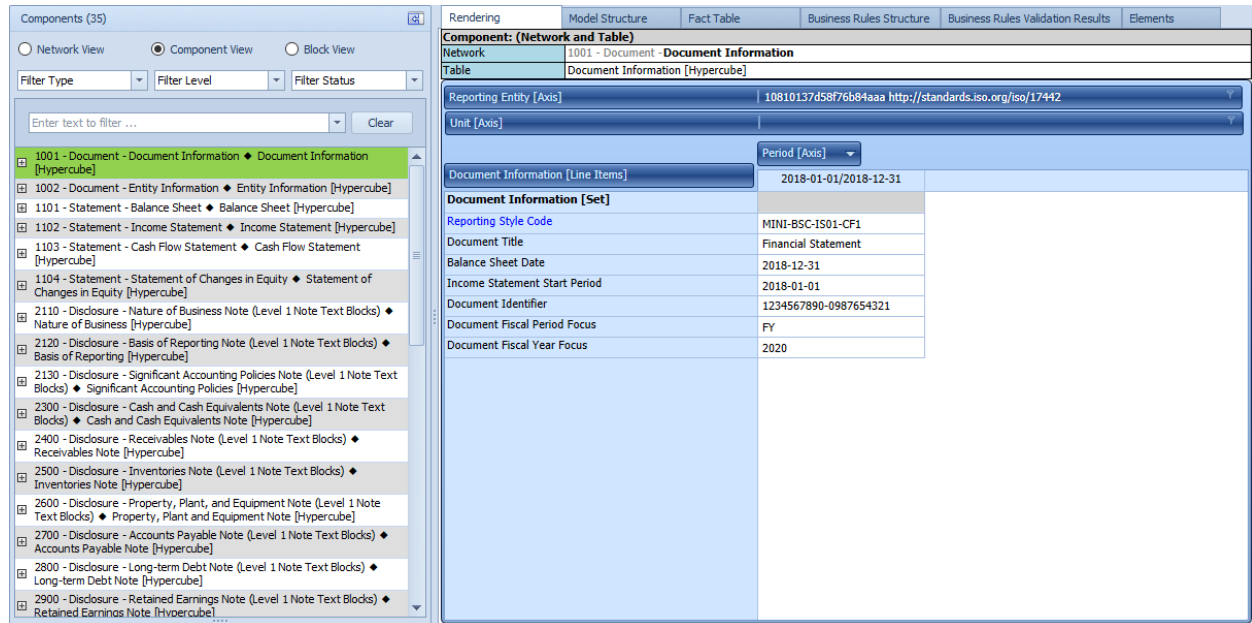
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And so again the volume continues to increase but the shape or pattern that each new information block and all the logical artifacts necessary to describe the information block, and therefore disclosures represented using that information block, do not change.

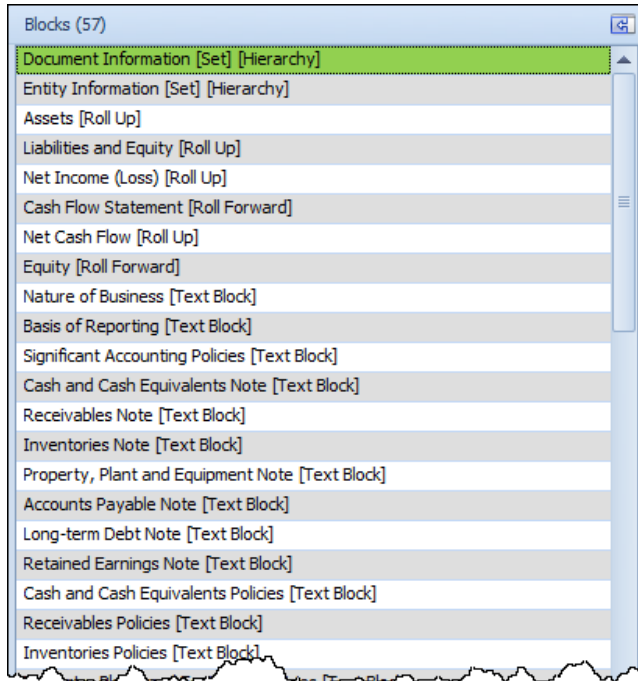
MINI

Our final example, which I refer to as the MINI financial reporting scheme³⁹ which has some interesting characteristics related to internal financial reporting, rounds out our examples. The MINI is represented more like a complete financial reporting scheme than a single report. It does not have all the sophisticated information models of the PROOF, but it ties information together in another way using the accounting system trial balance.



³⁹ MINI Financial Reporting Scheme, <http://xbrlsite.azurewebsites.net/2019/Prototype/mini/documentation/Home.html>

Information Blocks:



Disclosure Mechanics:

Primary Information									
#	Disclosure	Category	Level	Pattern	Disclosure Found	Disclosure Consistent	Applicable	Representation Concept [TEXT BLOCK]	Representation Concept DETAIL
1	Accounts Payable Roll Forward	Unknown	Level3TextBlock,Level4Detail	RollForward	True	CONSISTENT	True	Accounts Payable Roll Forward [Text Block]	Accounts Payable
2	Accounts Payable Subclassifications	Unknown	Level3TextBlock,Level4Detail	RollUp	True	CONSISTENT	True	Accounts Payable Subclassifications [Text Block]	Accounts Payable
3	Assets Roll Up	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Assets
4	Balance Sheet, Classified	Statement	UNKNOWN	Component	True	CONSISTENT	True	-	-
5	Basis of Presentation	Unknown	Level1TextBlock	TextBlock	True	CONSISTENT	True	Basis of Reporting [Text Block]	NOT-EXPECTED
6	Cash and Cash Equivalents Roll Forward	Unknown	Level3TextBlock,Level4Detail	RollForward	True	CONSISTENT	True	Cash and Cash Equivalents Roll Forward [Text Block]	Cash and Cash Equivalents
7	Cash and Cash Equivalents Subclassifications	Unknown	Level3TextBlock,Level4Detail	RollUp	True	CONSISTENT	True	Cash and Cash Equivalents Subclassifications [Text Block]	Cash and Cash Equivalents
8	Cash and Cash Equivalents Summary Roll Forward	Unknown	Level4Detail	RollForward	True	CONSISTENT	True	NOT-EXPECTED	Cash and Cash Equivalents
9	Cash Flow Statement, Direct Method	Statement	UNKNOWN	Component	True	CONSISTENT	True	-	-
10	Document Information	Unknown	Level4Detail	Hierarchy	True	CONSISTENT	True	NOT-EXPECTED	Balance Sheet Date
11	Entity Information	Unknown	Level4Detail	Hierarchy	True	CONSISTENT	True	NOT-EXPECTED	Economic Entity Name
12	Finished Goods Subclassifications	Unknown	Level3TextBlock,Level4Detail	RollUp	True	CONSISTENT	True	Finished Goods Subclassifications [Text Block]	Finished Goods
13	Income Statement	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Net Income (Loss)
14	Inventories Roll Forward	Unknown	Level3TextBlock,Level4Detail	RollForward	True	CONSISTENT	True	Inventories Roll Forward [Text Block]	Inventories
15	Inventories Subclassifications	Unknown	Level3TextBlock,Level4Detail	RollUp	True	CONSISTENT	True	Inventories Subclassifications [Text Block]	Inventories
16	Liabilities and Equity Roll Up	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Liabilities and Equity
17	Long-Term Debt Maturities	Unknown	Level3TextBlock,Level4Detail	RollUp	True	CONSISTENT	True	Long-term Debt Maturities [Text Block]	Long-term Debt
18	Long-Term Debt Roll Forward	Unknown	Level3TextBlock,Level4Detail	RollForward	True	CONSISTENT	True	Long-term Debt Roll Forward [Text Block]	Long-term Debt
19	Long-Term Debt Subclassifications	Unknown	Level3TextBlock,Level4Detail	RollUp	True	CONSISTENT	True	Long-term Debt Subclassifications [Text Block]	Long-term Debt
20	Nature of Entity	Unknown	Level1TextBlock	TextBlock	True	CONSISTENT	True	Nature of Business [Text Block]	NOT-EXPECTED
21	Net Cash Flow Roll Up	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Net Cash Flow
22	Property, Plant, and Equipment, Net Roll Forward	Unknown	Level3TextBlock,Level4Detail	RollForward	True	CONSISTENT	True	Property, Plant, and Equipment Roll Forward [Text Block]	Property, Plant and Equipment
23	Property, Plant, and Equipment, Net Subclassifications	Unknown	Level3TextBlock,Level4Detail	RollUp	True	CONSISTENT	True	Property, Plant, and Equipment Subclassifications [Text Block]	Property, Plant and Equipment
24	Receivables Roll Forward	Unknown	Level3TextBlock,Level4Detail	RollForward	True	CONSISTENT	True	Receivables Roll Forward [Text Block]	Receivables
25	Receivables Subclassifications	Unknown	Level3TextBlock,Level4Detail	RollUp	True	CONSISTENT	True	Receivables Subclassifications [Text Block]	Receivables
26	Retained Earnings Roll Forward	Unknown	Level4Detail	RollForward	True	CONSISTENT	True	NOT-EXPECTED	Retained Earnings
27	Significant Accounting Policies	Unknown	Level1TextBlock	TextBlock	True	CONSISTENT	True	Significant Accounting Policies [Text Block]	NOT-EXPECTED
28	Statement of Changes in Equity	Unknown	Level4Detail	RollForward	True	CONSISTENT	True	NOT-EXPECTED	Equity
29	Transactions Groupings	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Check Sum Changes
30	Trial Balance	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Check Sum

Reporting Checklist:

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#	Disclosure	Checklist Category	Reason Disclosure Must Exist	Discovered	Expectation Met	Link to Disclosure Mechanics
0	Reporting Checklist					
1	Document Information	Required disclosure	Disclosure always required	True	CONSISTENT	Document Information
2	Inventories Subclassifications	Possible disclosure	Disclosure is present	True	CONSISTENT	Inventories Subclassifications
3	Inventories Roll Forward	Possible disclosure	Disclosure is present	True	CONSISTENT	Inventories Roll Forward
4	Transactions Groupings	Possible disclosure	Disclosure is present	True	CONSISTENT	Transactions Groupings
5	Trial Balance	Possible disclosure	Disclosure is present	True	CONSISTENT	Trial Balance
6	Entity Information	Required disclosure	Disclosure always required	True	CONSISTENT	Entity Information
7	Balance Sheet, Classified	Required disclosure	Disclosure always required, satisfied by Assets Roll Up and Liabilities and Equity...	True	CONSISTENT	Balance Sheet, Classified
8	Assets Roll Up	Part of disclosure	Satisfies Balance Sheet, Classified disclosure	True	CONSISTENT	Assets Roll Up
9	Liabilities and Equity Roll Up	Part of disclosure	Satisfies Balance Sheet, Classified disclosure	True	CONSISTENT	Liabilities and Equity Roll Up
10	Income Statement	Required disclosure	Disclosure always required	True	CONSISTENT	Income Statement
11	Cash Flow Statement, Direct Method	Required disclosure	Disclosure always required, satisfied by Net Cash Flow Roll Up and Cash and Ca...	True	CONSISTENT	Cash Flow Statement, Direct Method
12	Net Cash Flow Roll Up	Part of disclosure	Satisfies Cash Flow Statement, Direct Method disclosure	True	CONSISTENT	Net Cash Flow Roll Up
13	Cash and Cash Equivalents Summary Roll Forward	Part of disclosure	Satisfies Cash Flow Statement, Direct Method disclosure	True	CONSISTENT	Cash and Cash Equivalents Summary Roll Forward
14	Statement of Changes in Equity	Required disclosure	Disclosure always required	True	CONSISTENT	Statement of Changes in Equity
15	Basis of Presentation	Required disclosure	Disclosure always required	True	CONSISTENT	Basis of Presentation
16	Nature of Entity	Required disclosure	Disclosure always required	True	CONSISTENT	Nature of Entity
17	Significant Accounting Policies	Required disclosure	Disclosure always required	True	CONSISTENT	Significant Accounting Policies
18	Cash and Cash Equivalents Roll Forward	Line item exists, then disclosure required	Required because line item mini:CashAndCashEquivalents was reported	True	CONSISTENT	Cash and Cash Equivalents Roll Forward
19	Cash and Cash Equivalents Subclassifications	Line item exists, then disclosure required	Required because line item mini:CashAndCashEquivalents was reported	True	CONSISTENT	Cash and Cash Equivalents Subclassifications
20	Receivables Roll Forward	Line item exists, then disclosure required	Required because line item mini:Receivables was reported	True	CONSISTENT	Receivables Roll Forward
21	Receivables Subclassifications	Line item exists, then disclosure required	Required because line item mini:Receivables was reported	True	CONSISTENT	Receivables Subclassifications
22	Inventories Roll Forward	Line item exists, then disclosure required	Required because line item mini:Inventories was reported	True	CONSISTENT	Inventories Roll Forward
23	Inventories Subclassifications	Line item exists, then disclosure required	Required because line item mini:Inventories was reported	True	CONSISTENT	Inventories Subclassifications
24	Property, Plant, and Equipment, Net Roll Forward	Line item exists, then disclosure required	Required because line item mini:PropertyPlantAndEquipment was reported	True	CONSISTENT	Property, Plant, and Equipment, Net Roll Forward
25	Property, Plant, and Equipment, Net Subclassifications	Line item exists, then disclosure required	Required because line item mini:PropertyPlantAndEquipment was reported	True	CONSISTENT	Property, Plant, and Equipment, Net Subclassifications
26	Accounts Payable Roll Forward	Line item exists, then disclosure required	Required because line item mini:AccountsPayable was reported	True	CONSISTENT	Accounts Payable Roll Forward
27	Accounts Payable Subclassifications	Line item exists, then disclosure required	Required because line item mini:AccountsPayable was reported	True	CONSISTENT	Accounts Payable Subclassifications
28	Retained Earnings Roll Forward	Line item exists, then disclosure required	Required because line item mini:RetainedEarnings was reported	True	CONSISTENT	Retained Earnings Roll Forward
29	Long-Term Debt Subclassifications	Line item exists, then disclosure required	Required because line item mini:LongTermDebt was reported	True	CONSISTENT	Long-Term Debt Subclassifications
30	Long-Term Debt Roll Forward	Line item exists, then disclosure required	Required because line item mini:LongTermDebt was reported	True	CONSISTENT	Long-Term Debt Roll Forward
31	Long-Term Debt Maturities	Line item exists, then disclosure required	Required because line item mini:LongTermDebt was reported	True	CONSISTENT	Long-Term Debt Maturities

Again, the volume of information blocks and disclosures continues to increase, but the logical model of the information still follows identifiable patterns and it is possible to verify that the report is properly functioning, completely described, consistent with expectations, and precise.

Microsoft 10-K (Recast version)

The volume now increases to the size of a real financial report. The Microsoft 2017 10-K, which I have analyzed extensively⁴⁰, was modified to add a complete set of rules that describes the report similar to how all the prior sample reports were completely described.

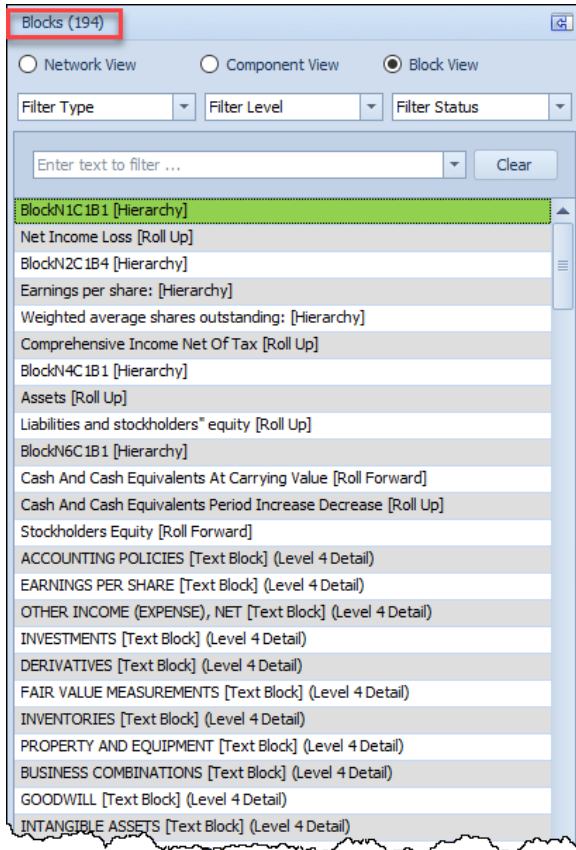
The Microsoft reports has 194 information blocks, 124 disclosures, 2035 facts, 128 Networks.

The screenshot displays the XBRL Viewer interface. On the left, a tree view shows the hierarchy of components, including '100000 - Document - Document and Entity Information'. The main window shows a table for 'Document and Entity Information' with columns for 'Statement [Line Items]', 'Unit [Axis]', and 'Period [Axis]'. The table contains various metadata fields such as 'Document Type', 'Amendment Flag', 'Entity Registrant Name', and 'Entity Public Float'.

Statement [Line Items]	Unit [Axis]	2017-07-31	2016-07-01/2017-06-30	2016-12-31
Document Type			10-K	
Amendment Flag			false	
Document Period End Date			2017-06-30	
Document Fiscal Year Focus			2017	
Document Fiscal Period Focus			FY	
Trading Symbol			MSFT	
Entity Registrant Name			MICROSOFT CORPORATION	
Entity Central Index Key			0000789019	
Current Fiscal Year End Date			--06-30	
Entity Well-known Seasoned Issuer			Yes	
Entity Current Reporting Status			Yes	
Entity Voluntary Filers			No	
Entity Filer Category			Large Accelerated Filer	
Entity Common Stock, Par Value Per Share	USD/shares / shares			0
Entity Common Stock, Shares Outstanding	shares	7,702,243,979		
Entity Public Float	USD			466,500,000,000
I.R.S. Employer Identification No.			911144442	

⁴⁰ Microsoft XBRL-based Report Analysis, <http://xbrl.squarespace.com/journal/2020/4/13/microsoft-xbrl-based-report-analysis.html>

Information Blocks:



Disclosure Mechanics⁴¹:

#	Disclosure	Category	Level	Pattern	Disclosure Found	Disclosure Consist...	Applicable	Representation Concept [TEXT BLOCK]	Representation Concept DETAIL
1	Accelerated Share Repurchases [Hierarchy]	Disclosure	Level4Detail	Hierarchy	True	CONSISTENT	True	NOT-EXPECTED	Stock Repurchase Program Authorized Amount1
2	Accumulated Other Comprehensive Income (Loss), by Equity Co...	Disclosure	Level3TextBlock/Level4Detail	RollForward	True	CONSISTENT	True	Schedule Of Accumulated Other Comprehensive I...	Stockholders Equity
3	Assets [Roll Up]	Statement	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Assets
4	Assumptions Used in Estimating Fair Value of Stock Award Grant...	Disclosure	Level4Detail	Hierarchy	True	CONSISTENT	True	NOT-EXPECTED	Share Based Compensation Arrangement By Sha...
5	Balance Sheet	Statement	Level4Detail	Component	True	CONSISTENT	True	-	-
6	Balance Sheet, Parenthetical, by Legal Entity [Hierarchy]	Statement	Level4Detail	Hierarchy	True	CONSISTENT	True	NOT-EXPECTED	Allowance For Doubtful Accounts Receivable Cur...
7	Basis of Reporting Note [Note Level]	Disclosure	Level1TextBlock	TextBlock	True	CONSISTENT	True	Basis Of Accounting Policy [Text Block]	NOT-EXPECTED
8	Business Acquisition, Pro Forma Information [Hierarchy]	Disclosure	Level3TextBlock/Level4Detail	Hierarchy	True	CONSISTENT	True	Business Acquisition Pro Forma Information [Text ...	Business Acquisitions Pro Forma Revenue
9	Business Acquisitions, by Acquisition [Roll Up]	Disclosure	Level3TextBlock/Level4Detail	RollUp	True	CONSISTENT	True	Schedule Of Business Acquisitions By Acquisition [...	Business Combination Recognized Identifiable As...
10	Cash and Cash Equivalents Summary [Roll Forward]	Statement	Level4Detail	RollForward	True	CONSISTENT	True	NOT-EXPECTED	Cash And Cash Equivalents At Carrying Value
11	Cash Flow Statement [Roll Forward]	Statement	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Cash And Cash Equivalents Period Increase Deor...
12	Commitments Note [Note Level]	Disclosure	Level1TextBlock	TextBlock	True	CONSISTENT	True	Commitments Disclosure [Text Block]	NOT-EXPECTED
13	Common Stock Outstanding [Roll Forward]	Disclosure	Level3TextBlock/Level4Detail	RollForward	True	CONSISTENT	True	Schedule Of Common Stock Outstanding Roll For...	Common Stock Shares Outstanding
14	Compensation and Employee Benefit Plans Note [Note Level]	Disclosure	Level1TextBlock	TextBlock	True	CONSISTENT	True	Compensation And Employee Benefit Plans [Text ...	NOT-EXPECTED
15	Compensation Cost for Share-based Payment Arrangements, All...	Disclosure	Level3TextBlock/Level4Detail	Hierarchy	True	CONSISTENT	True	Schedule Of Compensation Cost For Share Based...	Allocated Share Based Compensation Expense
16	Comprehensive Income (Loss) Note [Note Level]	Disclosure	Level1TextBlock	TextBlock	True	CONSISTENT	True	Comprehensive Income Note [Text Block]	NOT-EXPECTED
17	Contingencies Note [Note Level]	Disclosure	Level1TextBlock	TextBlock	True	CONSISTENT	True	Legal Matters And Contingencies [Text Block]	NOT-EXPECTED
18	Corporate and Other Operating Income (Loss) Activity [Hierarchy]	Disclosure	Level3TextBlock/Level4Detail	Hierarchy	True	CONSISTENT	True	Reconciliation Of Operating Profit Loss From Seg...	Operating Income Loss
19	Cost of Sales Policy [Policy Text Block]	Disclosure	Level2TextBlock	TextBlock	True	CONSISTENT	True	Cost Of Sales Policy [Text Block]	NOT-EXPECTED
20	Debt Note [Note Level]	Disclosure	Level1TextBlock	TextBlock	True	CONSISTENT	True	Debt Disclosure [Text Block]	NOT-EXPECTED
21	Deferred Revenue By Segment [Hierarchy]	Disclosure	Level4Detail	Hierarchy	True	CONSISTENT	True	NOT-EXPECTED	Deferred Revenue
22	Deferred Revenue Note [Note Level]	Disclosure	Level1TextBlock	TextBlock	True	CONSISTENT	True	Deferred Revenue Disclosure [Text Block]	NOT-EXPECTED
23	Deferred Tax Assets and Liabilities [Roll Up]	Disclosure	Level3TextBlock/Level4Detail	RollUp	True	CONSISTENT	True	Schedule Of Deferred Tax Assets And Liabilities T...	Deferred Tax Assets Liabilities Net
24	Derivative Instruments in Statement of Financial Position Fair Val...	Disclosure	Level3TextBlock/Level4Detail	RollUp	True	INCONSISTENT	True	Schedule Of Derivative Instruments In Statement...	NOT-FOUND
25	Derivative Instruments in Statement of Financial Position Fair Val...	Disclosure	Level3TextBlock/Level4Detail	Hierarchy	True	INCONSISTENT	True	Schedule Of Derivative Instruments In Statement...	NOT-FOUND
26	Derivative Note [Note Level]	Disclosure	Level1TextBlock	TextBlock	True	CONSISTENT	True	Derivative Instruments And Hedging Activities Dis...	NOT-EXPECTED
27	Derivatives Policy [Policy Text Block]	Disclosure	Level2TextBlock	TextBlock	True	CONSISTENT	True	Derivatives Policy [Text Block]	NOT-EXPECTED
28	Dividends Declared [Hierarchy]	Disclosure	Level3TextBlock/Level4Detail	Hierarchy	True	CONSISTENT	True	Dividends Declared Table [Text Block]	Dividends Payable Date Of Record Day Month A...
29	Dividends Declared Summary [Hierarchy]	Statement	Level4Detail	Hierarchy	True	CONSISTENT	True	NOT-EXPECTED	Common Stock Dividends Per Share Declared

⁴¹ Disclosures, a complete list,

http://xbrlsite.azurewebsites.net/2020/Prototype/Microsoft/Microsoft2017_Discovery.jpg

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Reporting Checklist⁴²:

#	Disclosure	Checklist Category	Reason Disclosure Must Exist	Discovered	Expectation Met	Link to Disclosure Mechanics
0	Reporting Checklist					
1	Document and Entity Information [Hierarchy]	Required disclosure	Disclosure always required	True	CONSISTENT	Document and Entity Information [Hierarchy]
2	Income Statement, by Legal Entity [Hierarchy]	Required disclosure	Disclosure always required	True	CONSISTENT	Income Statement, by Legal Entity [Roll Up]
3	Earnings Per Share Summary [Hierarchy]	Possible disclosure	Disclosure is present	True	CONSISTENT	Earnings Per Share Summary [Hierarchy]
4	Weighted Average Shares Summary, Basic and Diluted [Hierarchy]	Possible disclosure	Disclosure is present	True	CONSISTENT	Weighted Average Shares Summary, Basic and Diluted [Hierarchy]
5	Dividends Declared Summary [Hierarchy]	Possible disclosure	Disclosure is present	True	CONSISTENT	Dividends Declared Summary [Hierarchy]
6	Income Statement, Parenthetical, by Legal Entity [Hierarchy]	Possible disclosure	Disclosure is NOT present	False	INCONSISTENT (N)	Income Statement, Parenthetical, by Legal Entity [Hierarchy]
7	Statement of Comprehensive Income [Roll Up]	Required disclosure	Disclosure always required	True	CONSISTENT	Statement of Comprehensive Income [Roll Up]
8	Statement of Comprehensive Income Parenthetical [Hierarchy]	Required disclosure	Disclosure is present	True	CONSISTENT	Statement of Comprehensive Income Parenthetical [Hierarchy]
9	Balance Sheet	Required disclosure	Disclosure always required, satisfied by Assets [Roll Up] and Liabilities and Equity [Roll Up]	True	CONSISTENT	Balance Sheet
10	Assets [Roll Up]	Part of disclosure	Satisfies Balance Sheet disclosure	True	CONSISTENT	Assets [Roll Up]
11	Liabilities and Equity [Roll Up]	Part of disclosure	Satisfies Balance Sheet disclosure	True	CONSISTENT	Liabilities and Equity [Roll Up]
12	Balance Sheet, Parenthetical, by Legal Entity [Hierarchy]	Possible disclosure	Disclosure is present	True	CONSISTENT	Balance Sheet, Parenthetical, by Legal Entity [Hierarchy]
13	Cash Flow Statement [Roll Forward]	Required disclosure	Disclosure always required	True	CONSISTENT	Cash Flow Statement [Roll Forward]
14	Cash and Cash Equivalents Summary [Roll Forward]	Possible disclosure	Disclosure is present	True	CONSISTENT	Cash and Cash Equivalents Summary [Roll Forward]
15	Statement of Changes in Equity [Roll Forward]	Required disclosure	Disclosure always required	True	CONSISTENT	Statement of Changes in Equity [Roll Forward]
16	Significant Accounting Policies Note [Note Level]	Required disclosure	Disclosure always required	True	CONSISTENT	Significant Accounting Policies Note [Note Level]
17	Earnings Per Share Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Earnings Per Share Note [Note Level]
18	Other Nonrecurring Income and Expense Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Other Nonrecurring Income and Expense Note [Note Level]
19	Investments in Debt and Equity Instruments, Cash and Cash Equivalents [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Investments in Debt and Equity Instruments, Cash and Cash Equivalents [Note Level]
20	Derivative Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Derivative Note [Note Level]
21	Fair Value Measurements Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Fair Value Measurements Note [Note Level]
22	Inventory Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Inventory Note [Note Level]
23	Property, Plant and Equipment Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Property, Plant and Equipment Note [Note Level]
24	Mergers, Acquisitions and Dispositions Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Mergers, Acquisitions and Dispositions Note [Note Level]
25	Goodwill Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Goodwill Note [Note Level]
26	Intangible Assets Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Intangible Assets Note [Note Level]
27	Debt Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Debt Note [Note Level]
28	Income Tax Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Income Tax Note [Note Level]
29	Restructuring and Related Activities Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Restructuring and Related Activities Note [Note Level]
30	Deferred Revenue Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Deferred Revenue Note [Note Level]
31	Commitments Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Commitments Note [Note Level]
32	Contingencies Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Contingencies Note [Note Level]
33	Stockholders Equity Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Stockholders Equity Note [Note Level]
34	Comprehensive Income (Loss) Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Comprehensive Income (Loss) Note [Note Level]
35	Employee Stock Ownership Plan (ESOP) Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Employee Stock Ownership Plan (ESOP) Note [Note Level]
36	Segment Reporting Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Segment Reporting Note [Note Level]
37	Quarterly Financial Information Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Quarterly Financial Information Note [Note Level]
38	Nature of Operations Note [Note Level]	Required disclosure	Disclosure always required	True	CONSISTENT	Nature of Operations Note [Note Level]
39	Base of Reporting Note [Note Level]	Required disclosure	Disclosure always required	True	CONSISTENT	Base of Reporting Note [Note Level]
40	Revenue Recognition Policy [Policy Text Block]	Required disclosure	Disclosure always required	True	CONSISTENT	Revenue Recognition Policy [Policy Text Block]
41	Use of Estimates [Policy Text Block]	Required disclosure	Disclosure is present	True	CONSISTENT	Use of Estimates [Policy Text Block]
42	Foreign Currency [Policy Text Block]	Possible disclosure	Disclosure is present	True	CONSISTENT	Foreign Currency [Policy Text Block]
43	Cost of Sales Policy [Policy Text Block]	Possible disclosure	Disclosure is present	True	CONSISTENT	Cost of Sales Policy [Policy Text Block]
44	Product Warranty [Policy Text Block]	Possible disclosure	Disclosure is present	True	CONSISTENT	Product Warranty [Policy Text Block]
45	Research, Development, and Computer Software [Policy Text Block]	Possible disclosure	Disclosure is present	True	CONSISTENT	Research, Development, and Computer Software [Policy Text Block]
46	Share-based Compensation, Options, and Incentive Plans [Policy Text Block]	Possible disclosure	Disclosure is present	True	CONSISTENT	Share-based Compensation, Options, and Incentive Plans [Policy Text Block]
47	Income Taxes Policy [Policy Text Block]	Possible disclosure	Disclosure is present	True	CONSISTENT	Income Taxes Policy [Policy Text Block]
48	Fair Value of Financial Instruments [Policy Text Block]	Possible disclosure	Disclosure is present	True	CONSISTENT	Fair Value of Financial Instruments [Policy Text Block]
49	Investments Policy [Policy Text Block]	Possible disclosure	Disclosure is present	True	CONSISTENT	Investments Policy [Policy Text Block]
50	Derivatives Policy [Policy Text Block]	Possible disclosure	Disclosure is present	True	CONSISTENT	Derivatives Policy [Policy Text Block]
51	Trade and Other Accounts Receivable Policy [Policy Text Block]	Possible disclosure	Disclosure is present	True	CONSISTENT	Trade and Other Accounts Receivable Policy [Policy Text Block]
52	Inventory Policy [Policy Text Block]	Possible disclosure	Disclosure is present	True	CONSISTENT	Inventory Policy [Policy Text Block]
53	Property, Plant and Equipment Policy [Policy Text Block]	Possible disclosure	Disclosure is present	True	CONSISTENT	Property, Plant and Equipment Policy [Policy Text Block]
54	Goodwill [Policy Text Block]	Possible disclosure	Disclosure is present	True	CONSISTENT	Goodwill [Policy Text Block]
55	Finite-lived Intangible Assets [Policy Text Block]	Possible disclosure	Disclosure is present	True	CONSISTENT	Finite-lived Intangible Assets [Policy Text Block]
56	New Accounting Pronouncements Policy [Policy Text Block]	Possible disclosure	Disclosure is present	True	CONSISTENT	New Accounting Pronouncements Policy [Policy Text Block]
57	Earnings Per Share Policy [Policy Text Block]	Possible disclosure	Disclosure is present	True	CONSISTENT	Earnings Per Share Policy [Policy Text Block]
58	Segment Reporting Policy [Policy Text Block]	Possible disclosure	Disclosure is present	True	CONSISTENT	Segment Reporting Policy [Policy Text Block]
59	Valuation Allowances And Reserves Balance [Roll Forward]	Possible disclosure	Disclosure is present	True	CONSISTENT	Valuation Allowances And Reserves Balance [Roll Forward]
60	New Accounting Pronouncement or Change in Accounting ...	Possible disclosure	Disclosure is present	True	CONSISTENT	New Accounting Pronouncement or Change in Accounting ...
61	New Accounting Pronouncement Effect on Balance Sheet ...	Possible disclosure	Disclosure is present	True	CONSISTENT	New Accounting Pronouncement Effect on Balance Sheet ...
62	Net Income Level Available to Common Shareholders [Roll Up]	Possible disclosure	Disclosure is present	True	CONSISTENT	Net Income Level Available to Common Shareholders [Roll Up]
63	Weighted Average Number of Shares Outstanding, Diluted	Possible disclosure	Disclosure is present	True	CONSISTENT	Weighted Average Number of Shares Outstanding, Diluted
64	Earnings Per Share, Basic and Diluted [Hierarchy]	Possible disclosure	Disclosure is present	True	CONSISTENT	Earnings Per Share, Basic and Diluted [Hierarchy]
65	Business Acquisitions, by Acquisition [Roll Up]	Possible disclosure	Disclosure is present	True	CONSISTENT	Business Acquisitions, by Acquisition [Roll Up]
66	Finite-lived Intangible Assets Acquired as Part of Business ...	Possible disclosure	Disclosure is present	True	CONSISTENT	Finite-lived Intangible Assets Acquired as Part of Business ...
67	Business Acquisitions, Pro Forma Information [Hierarchy]	Possible disclosure	Disclosure is present	True	CONSISTENT	Business Acquisitions, Pro Forma Information [Hierarchy]
68	Finite-lived Intangible Assets, Acquired, by Major Class [Roll Up]	Possible disclosure	Disclosure is present	True	CONSISTENT	Finite-lived Intangible Assets, Acquired, by Major Class [Roll Up]
69	Long-term Debt Maturities [Roll Up]	Possible disclosure	Disclosure is present	True	CONSISTENT	Long-term Debt Maturities [Roll Up]
70	Deferred Revenue by Segment [Hierarchy]	Possible disclosure	Disclosure is present	True	CONSISTENT	Deferred Revenue by Segment [Hierarchy]
71	Common Stock Outstanding [Roll Forward]	Possible disclosure	Disclosure is present	True	CONSISTENT	Common Stock Outstanding [Roll Forward]
72	Accelerated Share Repurchases [Hierarchy]	Possible disclosure	Disclosure is present	True	CONSISTENT	Accelerated Share Repurchases [Hierarchy]
73	Dividends Declared [Hierarchy]	Possible disclosure	Disclosure is present	True	CONSISTENT	Dividends Declared [Hierarchy]
74	Compensation Cost for Share-based Payment Arrangements	Possible disclosure	Disclosure is present	True	CONSISTENT	Compensation Cost for Share-based Payment Arrangements
75	Assumptions Used in Estimating Fair Value of Stock Award ...	Possible disclosure	Disclosure is present	True	CONSISTENT	Assumptions Used in Estimating Fair Value of Stock Award ...
76	Share-based Compensation Arrangements Activity, by Arrangements	Possible disclosure	Disclosure is present	True	CONSISTENT	Share-based Compensation Arrangements Activity, by Arrangements
77	Share-based Compensation Arrangements Activity, by Arrangements	Possible disclosure	Disclosure is present	True	CONSISTENT	Share-based Compensation Arrangements Activity, by Arrangements
78	Employee Purchase Shares [Hierarchy]	Possible disclosure	Disclosure is present	True	CONSISTENT	Employee Purchase Shares [Hierarchy]
79	Reconciliation of Revenue from Segments to Consolidated ...	Possible disclosure	Disclosure is present	True	CONSISTENT	Reconciliation of Revenue from Segments to Consolidated ...
80	Reconciliation of Operating Profit (Loss) from Segments to ...	Possible disclosure	Disclosure is present	True	CONSISTENT	Reconciliation of Operating Profit (Loss) from Segments to ...
81	Corporate and Other Operating Income (Loss) Activity [Roll Up]	Possible disclosure	Disclosure is present	True	CONSISTENT	Corporate and Other Operating Income (Loss) Activity [Roll Up]
82	Revenue from External Customers, by Products or Services	Possible disclosure	Disclosure is present	True	CONSISTENT	Revenue from External Customers, by Products or Services
83	Quarterly Financial Information [Hierarchy]	Possible disclosure	Disclosure is present	True	CONSISTENT	Quarterly Financial Information [Hierarchy]
84	Quarterly Financial Information, Parenthetical [Hierarchy]	Possible disclosure	Disclosure is present	True	CONSISTENT	Quarterly Financial Information, Parenthetical [Hierarchy]
85	Fair Value of Assets and Liabilities Measured on Recurring ...	Possible disclosure	Disclosure is present	True	CONSISTENT	Fair Value of Assets and Liabilities Measured on Recurring ...
86	Reconciliation of Assets Measured at Fair Value on Recurring ...	Possible disclosure	Disclosure is present	True	CONSISTENT	Reconciliation of Assets Measured at Fair Value on Recurring ...
87	Derivative Instruments in Statement of Financial Position [Roll Up]	Possible disclosure	Disclosure mechanism are INCONSISTENT therefore cannot determine if disclos...	True	INCONSISTENT (N)	Derivative Instruments in Statement of Financial Position [Roll Up]
88	Derivative Instruments in Statement of Financial Position [Roll Up]	Possible disclosure	Disclosure mechanism are INCONSISTENT therefore cannot determine if disclos...	True	INCONSISTENT (N)	Derivative Instruments in Statement of Financial Position [Roll Up]
89	Gains (Losses) on Derivative Instruments [Roll Up]	Possible disclosure	Disclosure is present	True	CONSISTENT	Gains (Losses) on Derivative Instruments [Roll Up]
90	Realized Gain (Loss) on Investments [Roll Up]	Possible disclosure	Disclosure is present	True	CONSISTENT	Realized Gain (Loss) on Investments [Roll Up]
91	Investments Classified by Contractual Maturity Date, Current	Possible disclosure	Disclosure is present	True	CONSISTENT	Investments Classified by Contractual Maturity Date, Current
92	Investments Classified by Contractual Maturity Date, Ending	Possible disclosure	Disclosure is present	True	CONSISTENT	Investments Classified by Contractual Maturity Date, Ending
93	Inventory, Net (Current) [Roll Up]	Line item exists, then disclosure required	Required because line item base:InventoryNet was reported	True	CONSISTENT	Inventory, Net (Current) [Roll Up]
94	Property, Plant and Equipment, Net, by Type [Roll Up]	Line item exists, then disclosure required	Required because line item base:PropertyPlantAndEquipmentNet was reported	True	CONSISTENT	Property, Plant and Equipment, Net, by Type [Roll Up]
95	Property, Plant and Equipment, Net, by Type [Roll Up]	Alternative representation	Not necessary, satisfied by Property, Plant and Equipment, Net, by Type [Roll Up]	True	CONSISTENT	Property, Plant and Equipment, Net, by Type [Roll Up]
96	Finite-lived Intangible Assets, Net, by Major Class [Roll Up]	Line item exists, then disclosure required	Required because line item base:FiniteLivedIntangibleAssetsNet was reported	True	CONSISTENT	Finite-lived Intangible Assets, Net, by Major Class [Roll Up]
97	Finite-lived Intangible Assets, by Major Class [Roll Up]	Line item exists, then disclosure required	NOT required, because line item base:FiniteLivedIntangibleAssetsNet was reported	False	N/A	Finite-lived Intangible Assets, by Major Class [Roll Up]
98	Goodwill [Roll Forward]	Line item exists, then disclosure required	Required because line item base:Goodwill was reported	True	CONSISTENT	Goodwill [Roll Forward]
99	Finite-lived Intangible Assets, Future Amortization Expenses	Possible disclosure	Disclosure is present	True	CONSISTENT	Finite-lived Intangible Assets, Future Amortization Expenses
100	Deferred Tax Assets and Liabilities [Roll Up]	Line item exists, then disclosure required	Required because line item base:DeferredTaxAssetsAndLiabilitiesNet was reported	True	CONSISTENT	Deferred Tax Assets and Liabilities [Roll Up]
101	Reconciliation of Statutory to Effective Income Tax Rate, ...	Line item exists, then disclosure required	Required because line item base:IncomeTaxExpenseBenefit was reported	True	CONSISTENT	Reconciliation of Statutory to Effective Income Tax Rate, ...
102	Income Tax Expense (Benefit), Current and Deferred Det...	Line item exists, then disclosure required	Required because line item base:IncomeTaxExpenseBenefit was reported	True	CONSISTENT	Income Tax Expense (Benefit), Current and Deferred Det...
103	Restructuring Reserve, by Type of Cost [Roll Forward]	Line item exists, then disclosure required	Required because line item base:RestructuringReserve was reported	True	CONSISTENT	Restructuring Reserve, by Type of Cost [Roll Forward]
104	Unrecognized Tax Benefits, Excluding Amounts Pertaining ...	Possible disclosure	Disclosure is present	True	CONSISTENT	Unrecognized Tax Benefits, Excluding Amounts Pertaining ...
105	Income before Income Tax, Domestic and Foreign [Roll Up]	Line item exists, then disclosure required	Required because line item base:IncomeBeforeIncomeTaxDomesticAndForeign was reported	True	CONSISTENT	Income before Income Tax, Domestic and Foreign [Roll Up]
106	Restructuring Reserve [Roll Forward]	Possible disclosure	Disclosure is present	True	CONSISTENT	Restructuring Reserve [Roll Forward]
107	Restructuring Charges [Roll Up]	Possible disclosure	Disclosure is optional, satisfied by Restructuring Charges [Hierarchy] disclosure	False	N/A	Restructuring Charges [Roll Up]
108	Restructuring Charges [Hierarchy]	Alternative representation	Alternative to possible disclosure Restructuring Charges [Roll Up]	True	CONSISTENT	Restructuring Charges [Hierarchy]
109	Compensation and Employee Benefits Plans Note [Note Level]	Possible disclosure	Disclosure is present	True	CONSISTENT	Compensation and Employee Benefits Plans Note [Note Level]
110	Long-term Debt Instruments, by Instrument [Hierarchy]	Possible disclosure	Disclosure is present	True	CONSISTENT	Long-term Debt Instruments, by Instrument [Hierarchy]
111	Long-term Debt Instruments, by Instrument [Roll Up]	Alternative representation	Not necessary, satisfied by Long-term Debt Instruments, by Instrument [Hierarchy]	True	N/A	Long-term Debt Instruments, by Instrument [Roll Up]
112	Future Minimum Payments, Present Value of Net Minimum ...	Possible disclosure	Disclosure is present	True	CONSISTENT	Future Minimum Payments, Present Value of Net Minimum ...
113	Future Minimum Payments Due and Operating Leases of ...	Possible disclosure	Disclosure is present	True	CONSISTENT	Future Minimum Payments Due and Operating Leases of ...
114	Leases of Leases Note [Note Level]	Possible disclosure	Disclosure is NOT present	False	N/A	Leases of Leases Note [Note Level]
115	Accumulated Other Comprehensive Income (Loss), by Equ...	Line item exists, then disclosure required	Required because line item base:AccumulatedOtherComprehensiveIncomeLoss was reported	True	CONSISTENT	Accumulated Other Comprehensive Income (Loss), by Equ...
116	Long-lived Assets in Individual Foreign Countries, by Geo...	Possible disclosure	Disclosure is present	True	CONSISTENT	Long-lived Assets in Individual Foreign Countries, by Geo...
117	Revenue from External Customers Attributed to Foreign C...	Possible disclosure	Disclosure is present	True	CONSISTENT	Revenue from External Customers Attributed to Foreign C...
118	Share-based Compensation, Restricted Stock Units Award...	Possible disclosure	Disclosure is present	True	CONSISTENT	Share-based Compensation, Restricted Stock Units Award...
119	Other Nonrecurring Income (Expense) [Roll Up]	Possible disclosure	Disclosure is present	True	CONSISTENT	Other Nonrecurring Income (Expense) [Roll Up]
120	Revenues from External Customers, by Geographic Area [Roll Up]	Possible disclosure	Disclosure is NOT present	False	N/A	Revenues from External Customers, by Geographic Area [Roll Up]
121	Unrecognized Information [Hierarchy]	Possible disclosure	Disclosure is NOT present	False	N/A	Unrecognized Information [Hierarchy]

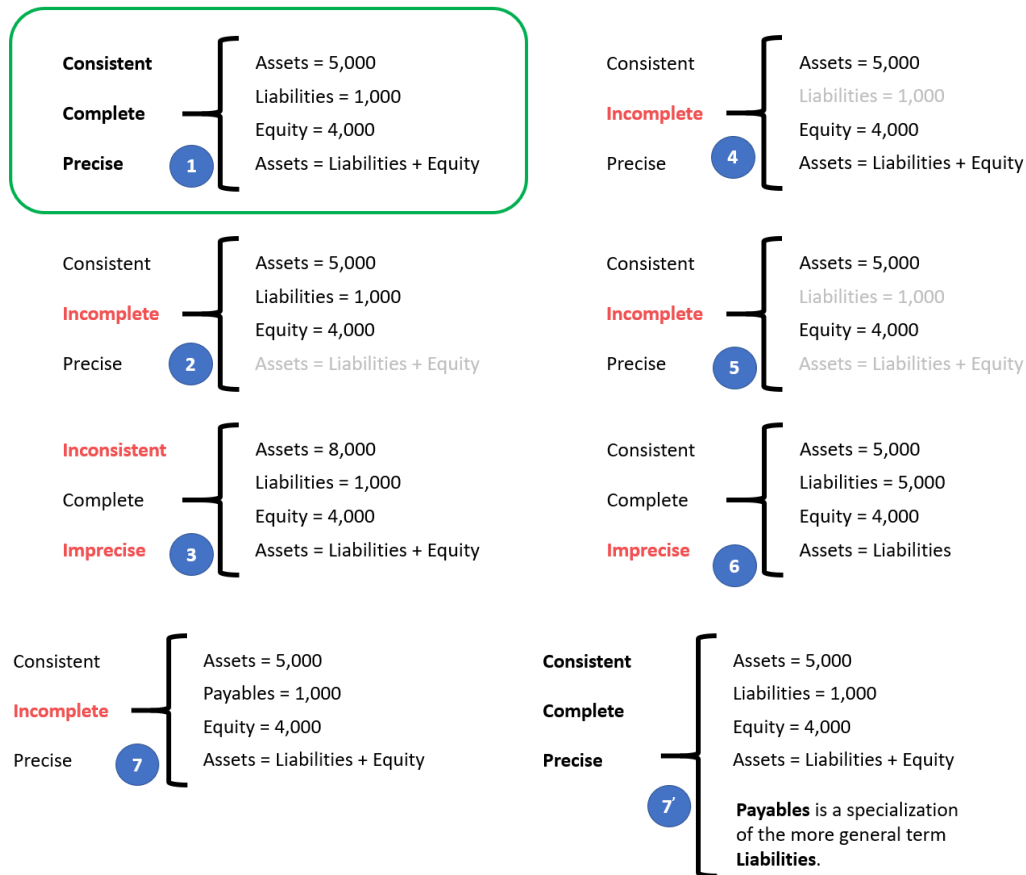
⁴² Full Microsoft reporting checklist, <http://xbrsite.azurewebsites.net/2020/master/msft/testing/ReportingChecklist.jpg>

Understanding Errors that Can Occur which Method Detects and Prevents (Comparison of States)

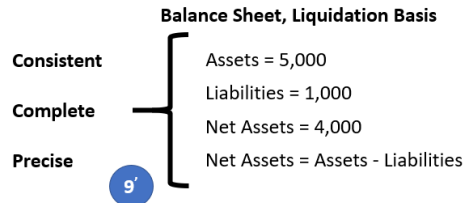
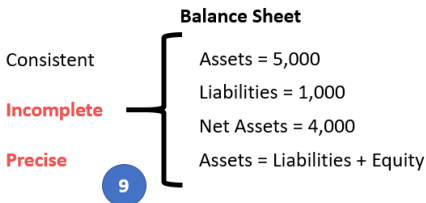
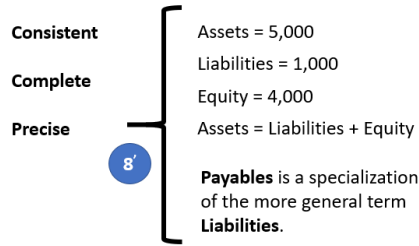
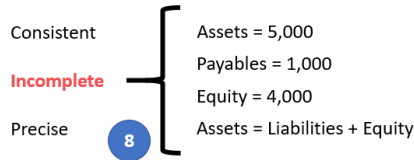
You can understand the types of errors that can occur in the Microsoft 10-K or any US GAAP or IFRS based XBRL-based financial report by looking at the types of errors that can exist in the accounting equation representation. This section explains those error types.

The following is a comparison of 9 states of the same simple financial report logical system, the accounting equation⁴³. The point of using such a simple financial report logical system is to explain specific things that can go wrong so that a reader can understand why each of the categories of rules are necessary. These 9 states can occur in any financial report with one fragment, two fragments, or 194 fragments like the Microsoft 10 K.

There are many ways to get a report wrong. Here is a summary of all nine states with the first state outlined in green being the only properly functioning logical system proven to be complete, consistent, and precise:



⁴³ Accounting equation, <http://xbrlsite.azurewebsites.net/2020/master/ae/index.html>



In the following sections I want to make some adjustments to the logical system which make the logical system either inconsistent, incomplete, or imprecise and explain why the system is then not a properly functioning logical system. I made videos that explain each of these impediments to a properly functioning logical system which you can see in this video playlist, *Understanding the Financial Report Logical System*⁴⁴.

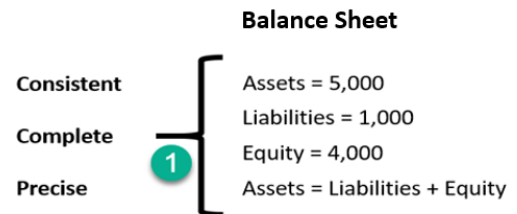
Before we get to the improperly functioning logical systems, let's take one final look at the properly functioning logical system so that you can use that as a baseline for comparing and contrasting the properly functioning and improperly functioning logical systems so that you can understand they sorts of errors that could occur in any XBRL-based financial report.

State 1: Properly Functioning Logical System

For completeness, I want to start by mentioning again our properly functioning logical system which is consistent, complete, and precise. It can be helpful to contrast other states to this state to understand the difference between properly functioning logical systems and improperly functioning systems.

Balance Sheet [Abstract]		Period [Axis]
		2020-12-31
Balance Sheet [Abstract]		
Assets		5,000
Liabilities		1,000
Equity		4,000

Result	Rule
Pass	\$Assets = \$Liabilities + \$Equity



⁴⁴ Understanding the Financial Report Logical System, https://www.youtube.com/playlist?list=PLqMZRUzQ64B7EWamzDP-WaYbS_WORL9nt

Again, this is considered a properly functioning logical system because (a) all the statements within the system are **consistent**; (b) the set of statements that describe the system is **complete**; and (c) the information conveyed by the system is **precise** in its representation of reality. Further, we are formally declaring this “reality”⁴⁵ to be our base understanding.

Also, we need to be explicit. We defined three terms “Assets”, “Liabilities”, and “Equity”.

Now, you may know what those three terms are; but a computer does not. You have to define what you work with relative to something that you know. Imagine our system defines four terms, “fac:Assets”, “fac:Liabilities”, “fac:Equity”, and “fac:LiabilitiesAndEquity”⁴⁶. You understand your system but you have to map every external system into your system⁴⁷. Your internal system understands more than the accounting equation system (i.e. you have LiabilitiesAndEquity and the rule “LiabilitiesAndEquity = Liabilities + Equity”). You have to be able to compute that value based on some other system’s information⁴⁸. It is perfectly reasonable for our system to create a concept LiabilitiesAndEquity and compute that value even though the accounting equation logical system does not have that explicit value.

The point is that different economic entities have different models; but all models of a financial reporting scheme are reconcilable from/to one another in some manner⁴⁹.

State 2: Incomplete Coverage by Rules

The logical system #2 below is intended to show exactly the same information as our #1 properly functioning logical system, except that #2 leaves out the rule “Assets = Liabilities and Equity” which is showed as grayed out (i.e. because it is assumed to be missing from the logical system).

Coverage is a measure of how well you **do** or **can** represent a domain of information within a logical system. “Do” is about using the tools you have correctly and effectively. “Can” is about the capabilities of the tools you are using to represent the rule.

For example, if your logical system neglects to include the rule “Assets = Liabilities + Equity” or if your tools don’t provide the capabilities to allow you to represent that rule; then there is the

⁴⁵ YouTube, *Reality*, <https://youtu.be/eq2Jw6waaCl>

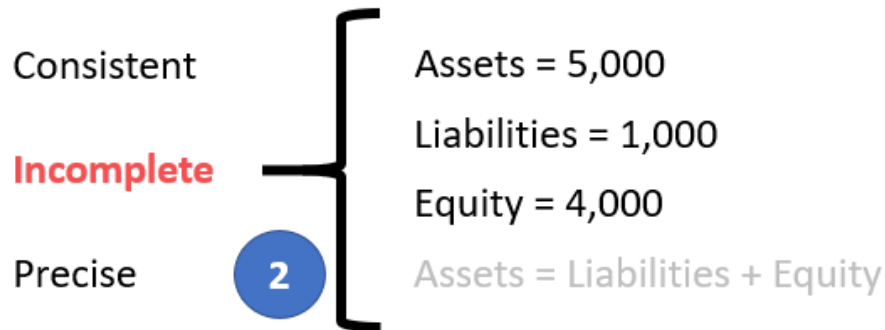
⁴⁶ Fundamental accounting concepts, <http://xbrlsite.azurewebsites.net/2020/core/master-ae/fac.xsd>

⁴⁷ Mapping from accounting equation to fundamental accounting concepts in our system, <http://xbrlsite.azurewebsites.net/2020/core/master-ae/fac-mapping-definition.xml>

⁴⁸ XBRL Formula to derive the value for LiabilitiesAndEquity, <http://xbrlsite.azurewebsites.net/2020/core/master-ae/fac-ImputeRule-LiabilitiesAndEquity-formula.xml>

⁴⁹ Charles Hoffman, CPA, *Special Theory of Machine-based Automated Communication of Semantic Information of Financial Statements*, <http://xbrl.squarespace.com/journal/2019/12/30/special-theory-of-machine-based-automated-communication-of-s.html>

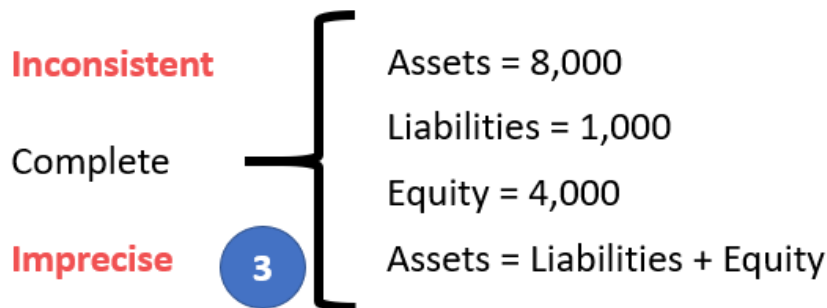
possibility that the facts being represented to be represented incorrectly and the system will not detect the inconsistency. As such, that logical system has **incomplete coverage**.



While this specific state #2 does have the Assets, Liabilities, and Equity facts consistent with the absent rule; the system is still incomplete because the coverage can be improved by adding the missing rule. If that missing rule is added, then the logical system can be considered complete again.

State 3: Inconsistent and Imprecise

All the statements in the system must be consistent for the logical system to be considered properly functioning. If statements are inconsistent, the logical system is not properly functioning. In this system #3, the values for Assets, Liabilities, and Equity are inconsistent with the rule “Assets = Liabilities + Equity”. From looking at the information provided, it is impossible to know exactly which of the three facts are incorrect; it is only possible to understand that the statements made within the logical system is inconsistent. It could be the case that the rule is incorrect.



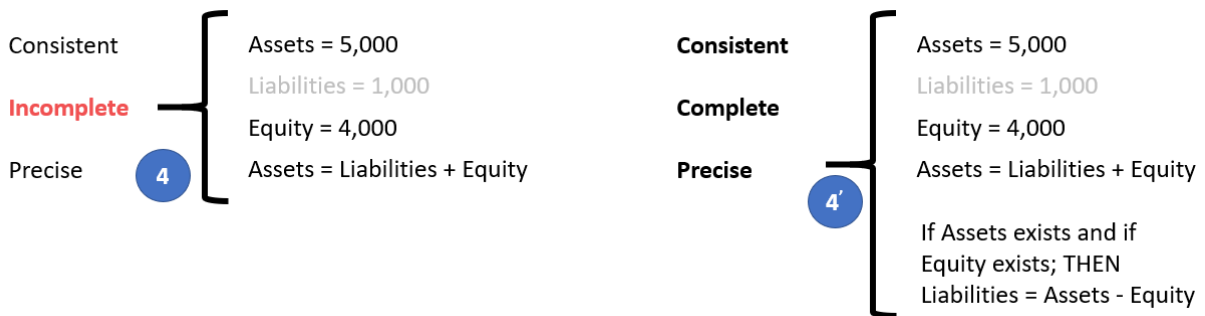
However, given that we know from state #1 that the value for Assets is 5,000 and not 8,000; the facts in this system is imprecise because the fact for Assets does not reflect reality. (We have, for the purposes of explaining these examples, defined reality and in that reality Assets = 5,000.)

State 4: Unreported Facts

In state #4, the situation is that the economic entity representing information in their report neglected to include the fact for Liabilities. Whether it is the case that a fact can, or cannot, be left unreported is a decision that can be made by the stakeholders of the system.

If it is the case that it is decided that the fact “Liabilities” can be omitted if both Assets and Equity are reported; then you must provide a rule to derive the value of Liabilities when that fact is not reported.

Below you see that the system has been adjusted in state #4’ to add the rule “IF Assets exists and if Equity exists; THEN Liabilities = Assets - Equity”⁵⁰. (NOTE that this rule should actually be “IF Assets exists and if Equity exists and if not(exists) Liabilities; THEN Liabilities = Assets - Equity”)



If it were likewise true that either Assets⁵¹ or Equity⁵² could also be left unreported, similarly derivation rules could be created for each of those facts. Note that XBRL Formula chaining⁵³ can be used to physically derive unreported facts if any one of these three facts remain unreported. Note that it is impossible to derive missing information if any two of the facts remain unreported. Adding the derivation rule makes the system complete.

Allowing certain line items of a report to go unreported specifies the need to create rules to derive missing information. Or saying this another way, omitting the possibility of unreported facts negates the need for creating derivation rules.

⁵⁰ Here is the impute or derivation rule that would be added to the accounting equation logical system for this situation, <http://xbrl.azurewebsites.net/2020/core/master-ae/ImputeRule-Key-1-Code-BS-Impute-01-formula.xml>

⁵¹ XBRL Formula rule for deriving Assets, <http://xbrl.azurewebsites.net/2020/core/master-ae/ImputeRule-Key-3-Code-BS-Impute-03-formula.xml>

⁵² XBRL Formula rule for deriving Equity, <http://xbrl.azurewebsites.net/2020/core/master-ae/ImputeRule-Key-2-Code-BS-Impute-02-formula.xml>

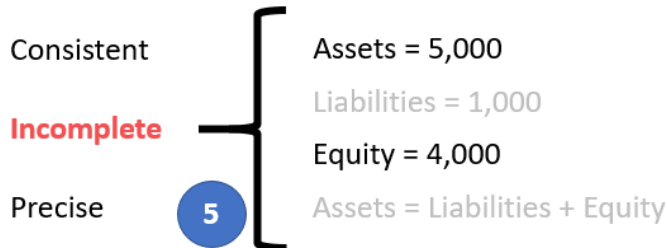
⁵³ Deriving Facts Using XBRL Formula Chaining (Example), <http://xbrl.squarespace.com/journal/2019/4/24/deriving-information-using-xbrl-formula-chaining-example.html>

A second downside of allowing unreported facts is that you lose the parity check or cross check if facts can go unreported. Said another way, it would be considered good or best practice to not leave important high-level financial report line items to go unreported.

State 5: Incomplete

Similar to state #4, in state #5 the logical system is incomplete because both (a) the fact Liabilities is unreported and also (b) the consistency rule “Assets = Liabilities + Equity” is missing from the logical system. Because both a fact and the rule are missing from the logical system, it would be impossible to deduce the value of Liabilities in this case. There is not enough information in the logical system to allow Liabilities to be derived.

At a minimum, a consistency crosscheck rule⁵⁴ plus the derivation rule to impute Liabilities⁵⁵ would be necessary.



Again, consistent with state #4; Assets and Equity would require similar rules and there is no parity check of reported information.

State 6: Imprecise

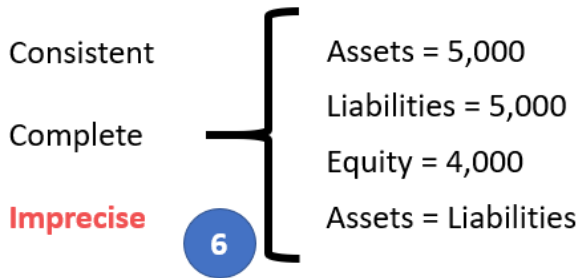
A logical system is a true and fair representation of some agreed upon realism within some area of knowledge. **Precision** is a measure of how precisely you do or can represent the information of a domain within a logical theory. The reality that we formalized in state #1 indicates that “Assets = Liabilities + Equity”. Yet, in the state #6 example, the rule “Assets = Liabilities” was provided. Further, the values of Assets and Liabilities are, in fact, consistent with the rule that has been provided.

Remember that in state #1 we formalized our truth to be that “Assets = Liabilities + Equity”. As such, this logical system can be described as being imprecise. To make this logical system

⁵⁴ XBRL Formula consistency crosscheck rule Assets = Liabilities + Equity, <http://xbrlsite.azurewebsites.net/2020/core/master-ae/Consistency-5-Code-BS01-formula.xml>

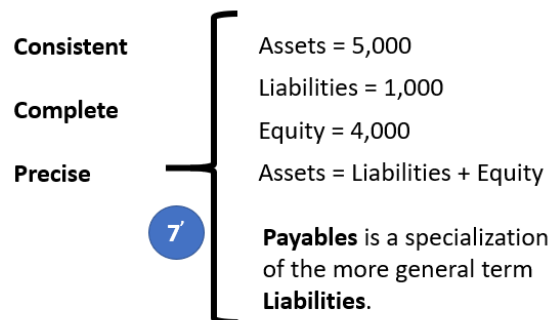
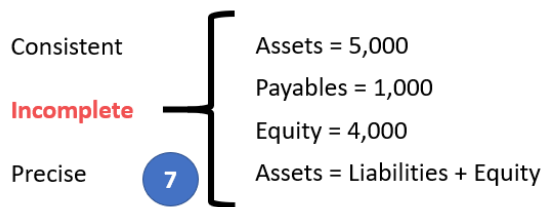
⁵⁵ XBRL Formula derivation rule to impute Liabilities, <http://xbrlsite.azurewebsites.net/2020/core/master-ae/ImputeRule-Key-1-Code-BS-Impute-01-formula.xml>

precise, all that needs to be done is to fix the rule “Assets = Liabilities” and make that rule consistent with our reality which states that “Assets = Liabilities + Equity”.



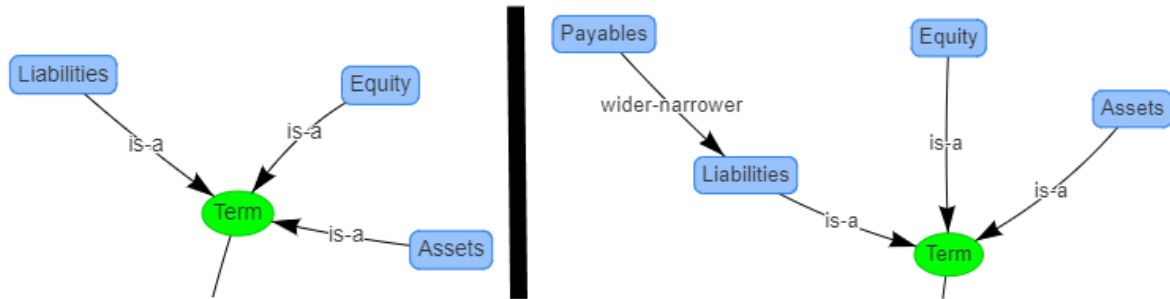
State 7: Extension Concept

In state #7 on the left, what we are trying to convey is that the economic entity reported the fact for Liabilities using the extension concept “Payables” that it had created. If a fact is represented using an extension concept created by a reporting entity; then a “general-special” or “wider-narrower” or “class-equivalentClass” association must be created to indicate to software applications of the relationship so that information can be used correctly. State #7’ on the right, the rule “Payables is a specialization of the more general term Liabilities” has been added to the logical system which allows the system to operate effectively⁵⁶.



And so, the graphic below shows a fragment of the knowledge graph on page 9 above before and after the information that “Payables is a specialization of the more general term Liabilities,” was added. On the left you see State 7, the taxonomy before the information was added and on the right you see “Payable” being added as an extension concept indicating that there is a “wider-narrower” relationship between Payables and Liabilities. Therefore, a machine based process can utilize the information per State 7’ because the process understands Liabilities in the taxonomy, understands the “wider-narrower” relationship therefore knowing that “Payables” is a type of Liability.

⁵⁶ XBRL Definition relations showing example of a mapping rule, <http://xbrlsite.azurewebsites.net/2020/core/master-ae/fac-mapping-definition.xml>

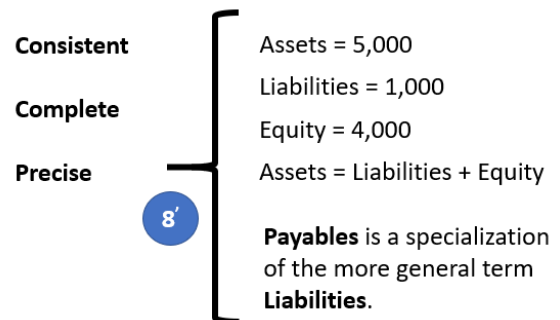
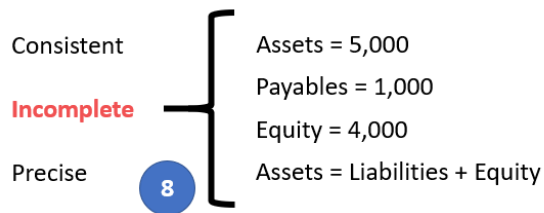


State 8: Base Taxonomy Wider/Narrower Concept Use

State #8 on the left below is similar to state #7 in that a different concept is used to report a fact; but while state #7 focuses on using an extension concept; state #8 points out that using a wider or narrower base taxonomy concept gives exactly the same result.

Now, our base state #1 does not have the concept “Payables”; but let’s assume for a moment that it does have the concept “Payables”. Also suppose that there was no information in the base logical system indicating the relationship between “Payables” and any other concept. If a fact is represented using a BASE TAXONOMY CONCEPT by a reporting entity; then a “general-special” or “wider-narrower” or “class-equivalentClass” association must exist in that base taxonomy to indicate that some concept is a permissible alternative for some other concept.

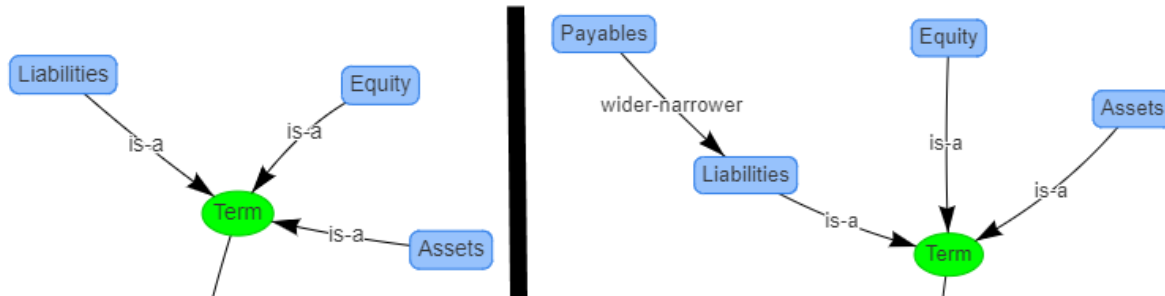
State #8’ on the right adds the rule “Payables is a specialization of the more general term Liabilities”⁵⁷.



And so, the graphic below shows a fragment of the knowledge graph on page 9 above before and after the information that “Payables is a specialization of the more general term Liabilities,” was added. On the left you see State 8, the base taxonomy before the information was added and on the right you see “Payable” being added as an extension concept indicating that there is

⁵⁷ XBRL Definition relations showing example of a mapping rule,
<http://xbrlsite.azurewebsites.net/2020/core/master-ae/fac-mapping-definition.xml>

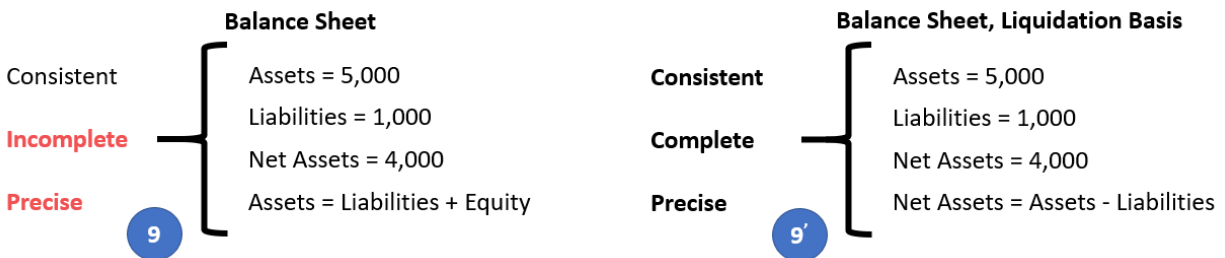
a “wider-narrower” relationship between Payables and Liabilities. Therefore, a machine based process can utilize the information per State 8’ because the process understands Liabilities in the base taxonomy, understands the “wider-narrower” relationship therefore knowing that “Payables” is a type of Liability, and therefore can understand what you are conveying.



State 9: Defining a Completely New Structure

State #9 below on the left focuses on the structure as contrast all the prior examples which focused on the terms and rules. If a new structure is created, the new structure must be referenced to the base taxonomy and the new structure needs to be explained using machine-readable rules⁵⁸. Even base taxonomy structures need to be defined in order to be referred to⁵⁹. When you say “Balance Sheet” you know what that means. But a machine does not know.

A base taxonomy should (a) provide all necessary structures separately, not intermingle different models in the same set of associations and (b) define what each structure must look like. Remember, computers are like babies and need to be led by the hand in order to understand the details you need them to understand.



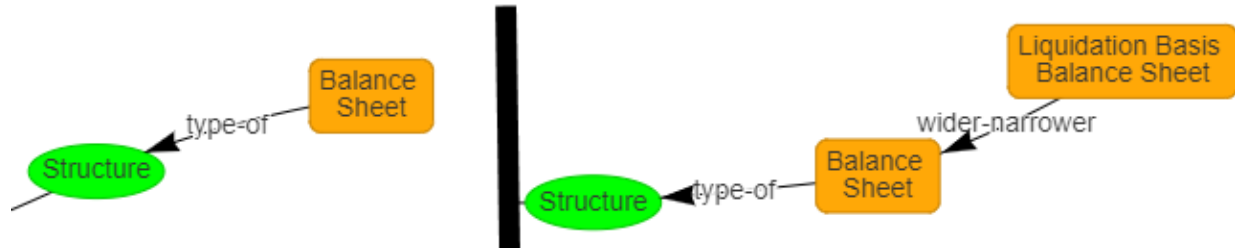
Finally, in our case we have only one disclosure, the Balance Sheet. In our case, the Balance Sheet is always required to be reported per this logical system. As such, that rule is stated in a

⁵⁸ XBRL Definition relations used to represent structure rules, <http://xbrlsite.azurewebsites.net/2020/core/master-ae/dm-1355-rules-def.xml>

⁵⁹ XBRL taxonomy schema used to define “Balance Sheet”, <http://xbrlsite.azurewebsites.net/2020/core/master-ae/disclosures.xsd>

machine-readable reporting checklist⁶⁰. Other logical systems with more disclosures will have more rules relating to when a disclosure is required to be provided in a report.

Similar to how “Payables” was added as an extension of the terms in the logical system; we can extend the structures to include a “Liquidation Basis Balance Sheet” structure which is a specialization of a Balance Sheet:



And such, an automated process will be able to understand the new structure because it is related to an existing structure. Other structures could be added in this same manner and only identified as a type of structure. But if you want to understand what that structure is, you need to associate any newly defined structure relative to some existing structure. Humans will only understand the difference by reading the documented associated with the new structure.

Good Practices/Best Practices

A **best practice** is a method or technique that has been generally accepted as superior to any other known alternatives because it produces results that are superior to those achieved by other means or because it has become a standard way of doing things.

Best practices (or good practices) are techniques that have produced outstanding results in other situations, inside or outside of a particular organization and which can be validated, codified, and shared with others and recommended as models to follow⁶¹.

To understand additional details related to how to represent XBRL-based financial reports at Level 5 please start with *Essentials of XBRL-based Digital Financial Reporting*⁶².

Conclusion

As is said, “If you cannot measure it, you cannot control it.” In this document we are providing an overview of a method that can be used to provide the controls and measurements against those

⁶⁰ XBRL Definition relations used to represent a reporting checklist or disclosure rules, <http://xbrlsite.azurewebsites.net/2020/core/master-ae/reporting-checklist-rules-def.xml>

⁶¹ European Guide to good Practice in Knowledge Management - Part 5: KM Terminology, page 3 (PDF page 9), <http://arielsheen.com/wp-content/uploads/2019/10/CEN-CWA14924-05-2004-Mar.pdf#page=9>

⁶² Charles Hoffman, CPA, *Essentials of XBRL-based Digital Financial Reporting*, <http://xbrlsite.azurewebsites.net/2021/essentials/EssentialsOfXBRLBasedDigitalFinancialReporting.pdf>

controls necessary to enable the creation of repeatable, reliable process control mechanisms which yield high-quality XBRL-based financial reports.

Therefore, using this method, enterprises can reliably and effectively stream a high-quality machine-readable XBRL-based global standard knowledge graph of a complete, consistent, and provably correct general purpose financial statement. Further, an entire record-to-report process can be automated effectively. This method provides both the flexibility and the control necessary.

To go to the next level, read *Understanding Method (Abridged)*⁶³. For the best example of a complete system represented using this method, please see the PROOF BASELINE⁶⁴ which is a small but complete and comprehensive example of implementing this method. To process reports using this method try the working proof of concept Pesseract⁶⁵ or the web service Pacioli⁶⁶.

This method has been rebranded as the **Seattle Method**⁶⁷.

⁶³ Understanding Method (Abridged),

http://xbrlsite.azurewebsites.net/2020/Library/UnderstandingMethod_Abridged.pdf

⁶⁴ PROOF BASELINE, http://xbrlsite.azurewebsites.net/2020/Library/UnderstandingMethod_Abridged.pdf

⁶⁵ Pesseract, <http://pesseract.azurewebsites.net/>

⁶⁶ Logical Contracts, XBRL and SBRM Reporting, <http://logicalcontracts.com/xbrl-and-sbrm-reporting/>

⁶⁷ Seattle Method, <http://xbrlsite.com/seattlemethod/SeattleMethod.pdf>