

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 cars¹.

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 levels² 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 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**³: Machine readable, nonstandard, structured for presentation. *PDF, HTML, or XHTML are examples of Level 1.*
- **Level 2**⁴: 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**⁵: 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.*

¹ Truecar, The 5 Levels of Autonomous Vehicles, <https://www.truecar.com/blog/5-levels-autonomous-vehicles/>

² Financial Report Levels, <http://xbrl.squarespace.com/journal/2021/4/5/financial-report-levels.html>

³ Level 1 financial report example, <http://xbrlsite.azurewebsites.net/2021/reporting-scheme/proof/reference-level1/>

⁴ Level 2 financial report example, <http://xbrlsite.azurewebsites.net/2021/reporting-scheme/proof/reference-level2/>

⁵ Level 3 financial report example, <http://xbrlsite.azurewebsites.net/2021/reporting-scheme/proof/reference-level3/>

- **Level 4⁶:** 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 5⁷:** 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.*
- **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

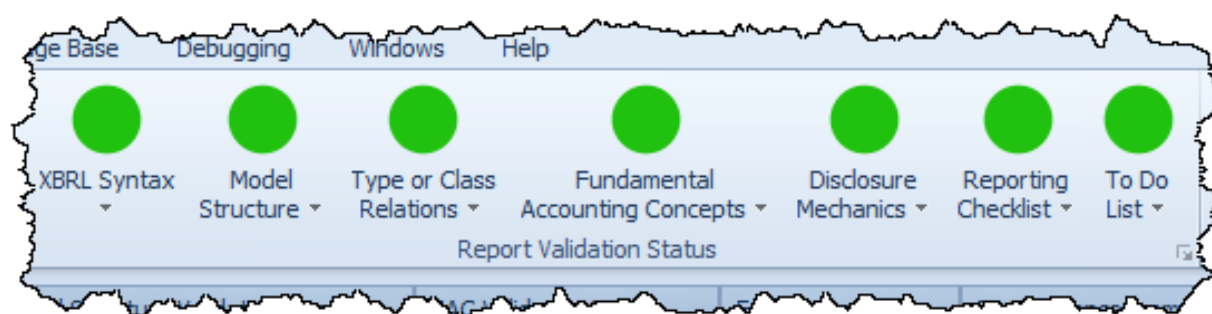
The following is a brief overview of the *Method of Implementing a Standard Financial Report Using the XBRL Syntax*⁸. In this resource we will not explain the method. Rather, we will endeavor to provide a succinct and understandable basic understanding to help business professionals understand how the method works.

⁶ Level 4 financial report example, <http://xbrlsite.azurewebsites.net/2021/reporting-scheme/proof/reference-level4/>

⁷ Level 5 financial report example, <http://xbrlsite.azurewebsites.net/2021/reporting-scheme/proof/reference-level5/>

⁸ *Method of Implementing a Standard Financial Report Using the XBRL Syntax*, <http://www.xbrlsite.com/2020/Theory/SBRM-Method.pdf>

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**⁹: This category of rules is provided by XBRL International in the form of a machine-readable set of rules referred to as a conformance suite¹⁰. This conformance suite is 100% 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**¹¹: 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

⁹ XBRL International, XBRL Conformance Suite, <https://specifications.xbrl.org/work-product-index-group-base-spec-base-spec.html>

¹⁰ XBRL International, XBRL 2.1, <https://specifications.xbrl.org/work-product-index-group-base-spec-base-spec.html>

¹¹ Model Structure rules, <http://xbrl.azurewebsites.net/2021/reporting-scheme/proof/model-structure/ModelStructure.html>

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**¹²: 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**¹³: This category of rules specifies information that helps detect common inconsistencies and contradictions within a financial report¹⁴. Consistency cross checks are created¹⁵ against expectation. There are many examples of the types of errors that have been known to commonly occur¹⁶. 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**¹⁷: 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**¹⁸: 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

¹² Type-subtype rules, <http://xbrl.azurewebsites.net/2021/reporting-scheme/proof/type-subtype/type-subtype-ModelStructure.html>

¹³ Fundamental accounting concepts, <http://xbrl.azurewebsites.net/2021/reporting-scheme/proof/fac/documentation/ConsistencyRulesList.html>

¹⁴ 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>

¹⁵ Consistency cross check rules, http://xbrl.azurewebsites.net/2019/Library/Signals_2019-03-31.jpg

¹⁶ High-quality examples of errors, <http://xbrl.squarespace.com/journal/2017/4/29/high-quality-examples-of-errors-in-xbrl-based-financial-repo.html>

¹⁷ Disclosure mechanics rules, <http://xbrl.azurewebsites.net/2021/reporting-scheme/proof/disclosure-mechanics/DisclosureMechanicsRulesInNaturalLanguage.html>

¹⁸ Reporting checklist rules, <http://xbrl.azurewebsites.net/2021/reporting-scheme/proof/reporting-checklist/reporting-checklist-rules.html>

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.

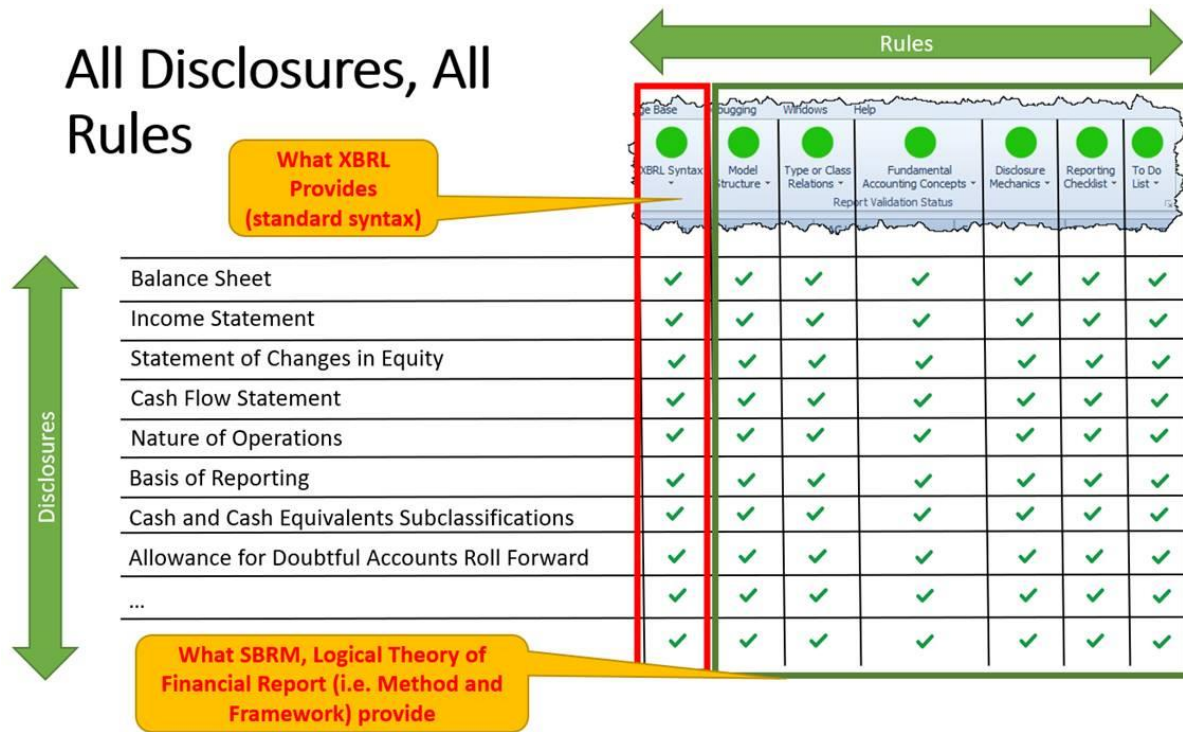
7. **To do list:** This category of rules is for cases where either (a) a rule CANNOT be specified in machine-readable terms because the rules language used is not expressive enough to represent the rule or (b) a rule COULD have been represented but it simply HAS NOT been represented in machine-readable 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 contradict or is not inconsistent with some other report fragment). The graphic below summarizes this visually:

All Disclosures, All Rules



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*¹⁹ and as explained in *Understanding Digital*²⁰, 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 leverage Lean Six Sigma philosophies and techniques²¹, financial report quality can be controlled (as

¹⁹ Effective Automation of Record to Report Process, <http://xbrl.squarespace.com/journal/2020/11/3/effective-automation-of-record-to-report-process.html>

²⁰ Understanding Digital, <http://xbrl.azurewebsites.net/2020/Library/UnderstandingDigital.pdf>

²¹ Lean Six Sigma, http://www.xbrl.com/mastering/Part01_Chapter02.K_LeanSixSigma.pdf

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.

XBRL Syntax Rules

Only XBRL technical syntax rules are executed. This includes mathematical computations executed using XBRL Calculations and XBRL Formula to the extent those rules are provided.

% Proof: XBRL syntax only %

```
checkReport3("http://www.xbrlsite.com/2021/testing/proof/report/instance.xml",
[], [cacheValidity(0)], Result).
```

		TERMS		
		Mappings		
		Type-subtype graph		
		Type-subtype table		
		All FACTS (technical listing)		
1	01-Balance Sheet	Structures	Facts	Pivots
2	02-Net Assets	Structures	Facts	Pivots
3	03-Comprehensive Income	Structures	Facts	Pivots
4	04-Comprehensive Income 2	Structures	Facts	Pivots
5	05-Cash Flow	Structures	Facts	Pivots
6	06-Prior Period Errors	Structures	Facts	Pivots
7	07-Changes in Equity	Structures	Facts	Pivots
8	08-Policies	Structures	Facts	Pivots
9	09-Variance Analysis	Structures	Facts	Pivots
10	10-Segment Revenues	Structures	Facts	Pivots
11	11-Stock Plan Activity	Structures	Facts	Pivots
12	12-Financial Highlights	Structures	Facts	Pivots
		Graph of reasoning		
		Blocks		
		Blocks Graph		
		Calculations		
	All Rules	Value Assertions		
		Messages		

Messages

NONE.

XBRL Formulas:

Per Pacoli:

Type	Defined	Bound	Derived	OK	Fail
valueAssertion	17	24	0	24	0

Per UBmatrix XPE Processor:

Formulas Compiled	Formula Fired	Assertions Compiled	Assertions Fired	Assertions Satisfied	Assertions Not Satisfied
0	0	17	24	24	0

Business Rules Results

Thu Jul 01 15:20:26 PDT 2021

XBRL Processor Version:4.0.0.2125

Report name: Detailed Output

Summary

Formulas Compiled	Formula Fired	Assertions Compiled	Assertions Fired	Assertions Satisfied	Assertions Not Satisfied
0	0	17	24	24	0

Assertion Report

Value Assertions

id	satisfied	message
Adjustment_ADJ01 (evaluation 1)	satisfied	\$Restated=0 = (\$OriginallyStated=2000 + \$CorrectionOfAnError=-500 + \$ChangesInAccountingPolicy=-1500)
Arithmetic_BS01 (evaluation 1)	satisfied	\$Assets=3500 = (\$Liabilities=0 + \$Equity=3500)
Arithmetic_BS01 (evaluation 2)	satisfied	\$Assets=0 = (\$Liabilities=0 + \$Equity=0)
Arithmetic_BS02 (evaluation 1)	satisfied	\$Assets=3500 = (\$CurrentAssets=500 + \$NoncurrentAssets=3000)
Arithmetic_BS02 (evaluation 2)	satisfied	\$Assets=0 = (\$CurrentAssets=0 + \$NoncurrentAssets=0)
Arithmetic_BS03 (evaluation 1)	satisfied	\$Liabilities=0 = (\$CurrentLiabilities=0 + \$NoncurrentLiabilities=0)
Arithmetic_BS03 (evaluation 2)	satisfied	\$Liabilities=0 = (\$CurrentLiabilities=0 + \$NoncurrentLiabilities=0)
Arithmetic_BS04 (evaluation 1)	satisfied	\$Equity=3500 = (\$EquityAttributableToControllingInterests=3000 + \$EquityAttributableToNoncontrollingInterests=500)
Arithmetic_BS04 (evaluation 2)	satisfied	\$Equity=0 = (\$EquityAttributableToControllingInterests=0 + \$EquityAttributableToNoncontrollingInterests=0)
Arithmetic_CF01 (evaluation 1)	satisfied	\$NetCashFlow=3500 = (\$NetCashFlowOperatingActivities=1500 + \$NetCashFlowFinancingActivities=1000 + \$NetCashFlowInvestingActivities=1000)
Arithmetic_IS01 (evaluation 1)	satisfied	\$ComprehensiveIncome=3000 = (\$Revenues=7000 - \$Expenses=3000 + \$Gains=1000 - \$Losses=2000)
Arithmetic_IS01 (evaluation 2)	satisfied	\$ComprehensiveIncome=3750 = (\$Revenues=6000 - \$Expenses=2000 + \$Gains=750 - \$Losses=1000)
Arithmetic_IS01 (evaluation 3)	satisfied	\$ComprehensiveIncome=-750 = (\$Revenues=1000 - \$Expenses=1000 + \$Gains=250 - \$Losses=1000)
Arithmetic_IS02 (evaluation 1)	satisfied	\$ComprehensiveIncome=3000 = (\$IncomeFromNormalActivitiesOfEntity=2000 + \$IncomeFromPeripheralOrIncidentalTransactionsOfEntity=1000)
Arithmetic_NA01 (evaluation 1)	satisfied	\$NetAssets=3500 = (\$Assets=3500 - \$Liabilities=0)
Arithmetic_NA01 (evaluation 2)	satisfied	\$NetAssets=0 = (\$Assets=0 - \$Liabilities=0)
MemberAggregation_MA1 (evaluation 1)	satisfied	\$Total=7000 eq sum(\$Each=[2000 1000 4000])
RollForward_CF01 (evaluation 1)	satisfied	\$Assets_BalanceStart=0 + \$NetCashFlow=3500 = \$Assets_BalanceEnd=3500
RollForward_SHE01 (evaluation 1)	satisfied	\$Equity_BalanceStart=0 + \$ComprehensiveIncome=3000 + \$InvestmentsByOwners=1000 - \$DistributionsToOwners=500 = \$Equity_BalanceEnd=3500
Variance_VAR01 (evaluation 1)	satisfied	\$Actual=7000 = (\$Budget=6000 + \$Variance=1000)
Variance_VAR02 (evaluation 1)	satisfied	\$Actual=3000 = (\$Budget=2000 + \$Variance=1000)
Variance_VAR03 (evaluation 1)	satisfied	\$Actual=1000 = (\$Budget=750 + \$Variance=250)
Variance_VAR04 (evaluation 1)	satisfied	\$Actual=2000 = (\$Budget=1000 + \$Variance=1000)
Variance_VAR05 (evaluation 1)	satisfied	\$Actual=3000 = (\$Budget=3750 + \$Variance=-750)

Model Structure Rules

XBRL technical syntax rules plus model structure rules that test the logical associations expressed within XBRL presentation relations (which are not tested per the XBRL technical specification).

% Proof: XBRL syntax + Model Structure %

```
checkReport3("http://www.xbrl.com/2021/testing/proof/report/instance.xml",
['http://accounting.auditchain.finance/sbrm/sbrm-structure-rules-strict-def.xml'], [cacheValidity(0)],
Result).
```

Per Pacioli:

Child	Parent						
	Network	Hypercube (a.k.a. Table)	Dimension (a.k.a. Axis)	Member	Line Items (a.k.a. Primary Items)	Abstract	Concept
Network	0	0	0	0	0	0	0
Hypercube (a.k.a. Table)	12	0	0	0	0	0	0
Dimension (a.k.a. Axis)	0	3	0	0	0	0	0
Member	0	0	3	6	0	0	0
Line Items (a.k.a. Primary Items)	0	12	0	0	0	0	0
Abstract	0	0	0	0	13	2	0
Concept	0	0	0	0	3	51	0

Per Pesseract:

Child	Parent						
	Network	Table	Axis	Member	LineItems	Abstract	Concept
[Network]	0	0	0	0	0	0	0
[Table]	12	0	0	0	0	0	0
[Axis]	0	3	0	0	0	0	0
[Member]	0	0	3	6	0	0	0
[LineItems]	0	12	0	0	0	0	0
[Abstract]	0	0	0	0	13	2	0
[Concept]	0	0	0	0	3	51	0

Blocks per Pacioli: (count=16)

Blocks

#	Network	Hypercube	Block
1	01-Balance Sheet	Balance Sheet [Hypercube]	1.1.1.3.rollUp Assets
2	01-Balance Sheet	Balance Sheet [Hypercube]	1.1.2.3.rollUp Liabilities and Equity
3	02-Net Assets	Net Assets [Hypercube]	1.1.1.3.rollUp Net Assets
4	03-Comprehensive Income	Comprehensive Income Statement [Hypercube]	1.1.1.5.rollUp Comprehensive Income
5	04-Comprehensive Income 2	Comprehensive Income Statement [Hypercube]	1.1.1.3.rollUp Comprehensive Income
6	05-Cash Flow	Cash Flow [Hypercube]	1.1.1.4.rollUp Net Cash Flow
7	05-Cash Flow	Cash Flow [Hypercube]	1.1.2.1.rollForward Assets, Beginning Balance
8	06-Prior Period Errors	Prior Period Errors [Hypercube]	1.2.1.1.adjustment Equity, Originally Stated
9	07-Changes in Equity	Changes in Equity [Hypercube]	1.1.1.1.rollForward Equity, Beginning Balance
10	08-Policies	Policies [Hypercube]	1.1.1.textBlock Basis of Reporting [Text Block]
11	08-Policies	Policies [Hypercube]	1.1.2.textBlock Nature of Operations [Text Block]
12	08-Policies	Policies [Hypercube]	1.1.3.textBlock Revenue Recognition Policy [Text Block]
13	09-Variance Analysis	Variance Analysis [Hypercube]	1.2.1.5.rollUp Comprehensive Income
14	10-Segment Revenues	Segment Revenues [Hypercube]	1.2.1.1.set Revenues
15	11-Stock Plan Activity	Weighted Average Grant Date Fair Value [Hypercube]	1.1.1.1.rollForwardInfo Nonvested Fair Value, Beginning Balance
16	12-Financial Highlights	Financial Highlights [Hypercube]	1.1.1.1.set Revenues

Blocks per Pesseract: (count=16)

The screenshot shows a window titled "Blocks (16)" with three radio buttons for "Network View", "Component View", and "Block View" (which is selected). Below these are three dropdown menus for "Filter Type", "Filter Level", and "Filter Status". A search bar contains the text "Enter text to filter ..." and a "Clear" button. The main area is a list of 16 items, each with a name and associated actions in brackets:

- Assets [Roll Up]
- Liabilities and Equity [Roll Up]
- Net Assets [Roll Up]
- Comprehensive Income [Roll Up]
- Comprehensive Income [Roll Up]
- Assets Roll Forward [Roll Up] [Roll Forward]
- Net Cash Flow [Roll Up]
- Prior Period Errors [Adjustment]
- Changes in Equity [Roll Forward]
- Basis of Reporting [Text Block]
- Nature of Operations [Text Block]
- Revenue Recognition Policy [Text Block]
- Variance Analysis [Roll Up]
- Segment Revenues [Set] [Hierarchy]
- Weighted Average Grant Date Fair Value [Roll Forward Info]
- Financial Highlights [Set] [Hierarchy]

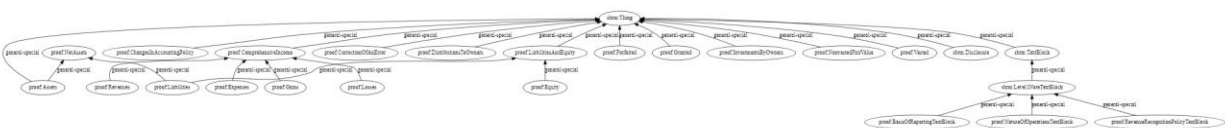
Type-subtype Rules (a.k.a. Parts and Wholes)

XBRL technical syntax plus tests XBRL calculations associations against expectations to be sure the report model is expressed consistently with the base taxonomy expectations.

% Proof: XBRL syntax + Type-subtype %


```
checkReport3("http://www.xbrlsite.com/2021/testing/proof/report/instance.xml",
['http://www.xbrlsite.com/2021/testing/proof/type-subtype/typeSubtype-rules-def.xml'],
[cacheValidity(0)], Result).
```

Types per Pacioli:



Generated by Pacioli version 8040550 (updated 5 hours ago). Analysis at 2021-07-01T23:00:50+0000 for perfectmile@gmail.com. This page will remain online at <https://pacioli.auditchain.finance/reportAnalysis/5ee613864dc5acaa6b69d2277d53c029c759e482.report/index.html> for about 28 days.

All TRANSITIVE (multi-level) type-subtype links



#	Type	Subtype
1	sbrm:Thing	sbrm:Disclosure
2	sbrm:Thing	proof:Assets
3	proof:NetAssets	proof:Assets
4	proof:NetAssets	proof:Liabilities
5	sbrm:Thing	proof:Assets
6	sbrm:Thing	proof:LiabilitiesAndEquity
7	proof:LiabilitiesAndEquity	proof:Liabilities
8	proof:LiabilitiesAndEquity	proof:Equity
9	sbrm:Thing	proof:ComprehensiveIncome
10	sbrm:Thing	proof:DistributionsToOwners
11	proof:ComprehensiveIncome	proof:Expenses
12	proof:ComprehensiveIncome	proof:Gains
13	sbrm:Thing	proof:InvestmentsByOwners
14	proof:ComprehensiveIncome	proof:Losses
15	proof:ComprehensiveIncome	proof:Revenues

No other software known to support type-subtype (a.k.a. Parts and Wholes) associations.

Disclosure Mechanics Rules

XBRL technical syntax verification plus checks the logical structures of disclosures represented to be sure the report model is consistent with expectations.

% Proof: XBRL syntax + Disclosure Mechanics %

```
checkReport3("http://www.xbrlsite.com/2021/testing/proof/report/instance.xml",
['http://www.xbrlsite.com/2021/testing/proof/disclosure-mechanics/dm.xsd'], [cacheValidity(0)],
Result).
```

		TERMS		
		Mappings		
		Type-subtype graph		
		Type-subtype table		
		All FACTS (technical listing)		
1	01-Balance Sheet	Structures	Facts	Pivots
2	02-Net Assets	Structures	Facts	Pivots
3	03-Comprehensive Income	Structures	Facts	Pivots
4	04-Comprehensive Income 2	Structures	Facts	Pivots
5	05-Cash Flow	Structures	Facts	Pivots
6	06-Prior Period Errors	Structures	Facts	Pivots
7	07-Changes in Equity	Structures	Facts	Pivots
8	08-Policies	Structures	Facts	Pivots
9	09-Variance Analysis	Structures	Facts	Pivots
10	10-Segment Revenues	Structures	Facts	Pivots
11	11-Stock Plan Activity	Structures	Facts	Pivots
12	12-Financial Highlights	Structures	Facts	Pivots
		Graph of reasoning		
		Blocks		
		Blocks Graph		
		Calculations		
	All Rules	Value Assertions		
		Disclosure Mechanics rules		
		Messages		

Messages

NONE.

Disclosures per Pacioli: (18)

Type	Defined	Bound	Derived	OK	Fail
disclosure	18	18	0	18	0

Disclosures per Pesseract: (18)

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	Basis of Reporting	Unknown	Level1TextBlock	TextBlock	True	CONSISTENT	True	Basis of Reporting [Text Block]	NOT-EXPECTED
5	Cash Flow Statement	Unknown	UNKNOWN	Component	True	CONSISTENT	True	-	-
6	Changes in Equity	Unknown	Level4Detail	RollForward	True	CONSISTENT	True	NOT-EXPECTED	Equity
7	Financial Highlights	Unknown	Level4Detail	Hierarchy	True	CONSISTENT	True	NOT-EXPECTED	Revenues
8	Income Statement	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Comprehensive Income
9	Income Statement Alternative	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Comprehensive Income
10	Liabilities and Equity Roll Up	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Liabilities and Equity
11	Nature of Operations	Unknown	Level1TextBlock	TextBlock	True	CONSISTENT	True	Nature of Operations [Text Block]	NOT-EXPECTED
12	Net Assets Roll Up	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Net Assets
13	Net Cash Flow Roll Up	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Net Cash Flow
14	Prior Period Errors	Unknown	Level4Detail	Adjustment	True	CONSISTENT	True	NOT-EXPECTED	Equity
15	Revenue Recognition Policy	Unknown	Level1TextBlock	TextBlock	True	CONSISTENT	True	Revenue Recognition Policy [Text Block]	NOT-EXPECTED
16	Segment Revenues	Unknown	Level4Detail	Hierarchy	True	CONSISTENT	True	NOT-EXPECTED	Revenues
17	Stock Plan Activity	Unknown	Level4Detail	RollForwardInfo	True	CONSISTENT	True	NOT-EXPECTED	Nonvested Fair Value
18	Variance Analysis	Unknown	Level4Detail	RollUp	True	CONSISTENT	True	NOT-EXPECTED	Comprehensive Income

Reporting Checklist Rules

XBRL technical syntax validation plus disclosure mechanics verification (which is required for reporting checklist verification to execute) plus reporting checklist verification to make sure all required disclosures have been properly reported within a financial report consistent with expectations.

% Proof: XBRL syntax + Disclosure Mechanics + Reporting Checklist %
 checkReport3("http://www.xbrlsite.com/2021/testing/proof/report/instance.xml",
 ['http://www.xbrlsite.com/2021/testing/proof/disclosure-mechanics/dm.xsd',
 'http://www.xbrlsite.com/2021/testing/proof/reporting-checklist/dr-rules-def.xml'], [cacheValidity(0)],
 Result).

	TERMS			
	Mappings			
	Type-subtype graph			
	Type-subtype table			
	All FACTS (technical listing)			
1	01-Balance Sheet	Structures	Facts	Pivots
2	02-Net Assets	Structures	Facts	Pivots
3	03-Comprehensive Income	Structures	Facts	Pivots
4	04-Comprehensive Income 2	Structures	Facts	Pivots
5	05-Cash Flow	Structures	Facts	Pivots
6	06-Prior Period Errors	Structures	Facts	Pivots
7	07-Changes in Equity	Structures	Facts	Pivots
8	08-Policies	Structures	Facts	Pivots
9	09-Variance Analysis	Structures	Facts	Pivots
10	10-Segment Revenues	Structures	Facts	Pivots
11	11-Stock Plan Activity	Structures	Facts	Pivots
12	12-Financial Highlights	Structures	Facts	Pivots
	Graph of reasoning			
	Blocks			
	Blocks Graph			
	Calculations			
	Value Assertions			
All Rules	Disclosure Mechanics rules			
	Report Checklist Rules			
	Messages			

Messages

NONE.

Per Pacioli: (18)

Type	Defined	Bound	Derived	OK	Fail
disclosureCheck	18	18	0	18	0

Per Pesseract: (18)

#	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 and Equity Roll Up disclosures	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	Income Statement	Required disclosure	Disclosure always required	True	CONSISTENT	Income Statement
5	Cash Flow Statement	Required disclosure	Disclosure always required, satisfied by Assets Roll Forward and Net Cash Flow Roll Up disclosures	True	CONSISTENT	Cash Flow Statement
6	Assets Roll Forward	Part of disclosure	Satisfies Cash Flow Statement disclosure	True	CONSISTENT	Assets Roll Forward
7	Net Cash Flow Roll Up	Part of disclosure	Satisfies Cash Flow Statement disclosure	True	CONSISTENT	Net Cash Flow Roll Up
8	Changes in Equity	Required disclosure	Disclosure always required	True	CONSISTENT	Changes in Equity
9	Financial Highlights	Possible disclosure	Disclosure is present	True	CONSISTENT	Financial Highlights
10	Prior Period Errors	Possible disclosure	Disclosure is present	True	CONSISTENT	Prior Period Errors
11	Variance Analysis	Possible disclosure	Disclosure is present	True	CONSISTENT	Variance Analysis
12	Segment Revenues	Possible disclosure	Disclosure is present	True	CONSISTENT	Segment Revenues
13	Stock Plan Activity	Possible disclosure	Disclosure is present	True	CONSISTENT	Stock Plan Activity
14	Basis of Reporting	Required disclosure	Disclosure always required	True	CONSISTENT	Basis of Reporting
15	Nature of Operations	Required disclosure	Disclosure always required	True	CONSISTENT	Nature of Operations
16	Revenue Recognition Policy	Required disclosure	Disclosure always required	True	CONSISTENT	Revenue Recognition Policy
17	Net Assets Roll Up	Possible disclosure	Disclosure is present	True	CONSISTENT	Net Assets Roll Up
18	Income Statement Alternative	Possible disclosure	Disclosure is present	True	CONSISTENT	Income Statement Alternative

Fundamental Accounting Concept Relations Rules

XBRL technical syntax verification plus fundamental accounting concepts relations continuity cross checks to make sure the report model and reported facts are consistent with expectations.

% Proof: XBRL syntax + FAC %

```
checkReport3("http://www.xbrlsite.com/2021/testing/proof/report/instance.xml",
['http://www.xbrlsite.com/2021/testing/proof/fac/PROOF-BSC-IS01-CF1_schema.xsd'],
[newRulesFormat, removePrecondFallbacks, removeValueAssertionFallbacks, cacheValidity(0)], Result).
```

		TERMS		
		Mappings		
		Type-subtype graph		
		Type-subtype table		
		All FACTS (technical listing)		
1	01-Balance Sheet	Structures	Facts	Pivots
2	02-Net Assets	Structures	Facts	Pivots
3	03-Comprehensive Income	Structures	Facts	Pivots
4	04-Comprehensive Income 2	Structures	Facts	Pivots
5	05-Cash Flow	Structures	Facts	Pivots
6	06-Prior Period Errors	Structures	Facts	Pivots
7	07-Changes in Equity	Structures	Facts	Pivots
8	08-Policies	Structures	Facts	Pivots
9	09-Variance Analysis	Structures	Facts	Pivots
10	10-Segment Revenues	Structures	Facts	Pivots
11	11-Stock Plan Activity	Structures	Facts	Pivots
12	12-Financial Highlights	Structures	Facts	Pivots
13	FAC-1-Balance Sheet	Structures	Facts	Pivots
14	FAC-2-Net Assets	Structures	Facts	Pivots
15	FAC-3-Comprehensive Income Statement	Structures	Facts	Pivots
16	FAC-4-Comprehensive Income Statement	Structures	Facts	Pivots
17	FAC-5-Net Cash Flow	Structures	Facts	Pivots
		Graph of reasoning		
		Blocks		
		Blocks Graph		
		Derivation Rules		
	All Rules	Calculations		
		Value Assertions		
		Messages		

Run ONLY the FAC rules:

% Proof: XBRL syntax + FAC, Render ONLY FAC %

```
checkReport3("http://www.xbrlsite.com/2021/testing/proof/report/instance.xml",
['http://www.xbrlsite.com/2021/testing/proof/fac/PROOF-BSC-IS01-CF1_schema.xsd'],
[newRulesFormat, removePrecondFallbacks, removeValueAssertionFallbacks, renderFAConly,
cacheValidity(0)], Result).
```

	TERMS			
	Mappings			
	Type-subtype graph			
	Type-subtype table			
	All FACTS (technical listing)			
1	FAC-1-Balance Sheet	Structures	Facts	Pivots
2	FAC-2-Net Assets	Structures	Facts	Pivots
3	FAC-3-Comprehensive Income Statement	Structures	Facts	Pivots
4	FAC-4-Comprehensive Income Statement	Structures	Facts	Pivots
5	FAC-5-Net Cash Flow	Structures	Facts	Pivots
	Graph of reasoning			
	Blocks			
	Blocks Graph			
	Derivation Rules			
All Rules	Calculations			
	Value Assertions			
	Messages			

Run FAC verification but DO NOT show FAC networks in Table of Contents:

% Proof: XBRL syntax + FAC, do NOT render FAC results %

```
checkReport3("http://www.xbrlsite.com/2021/testing/proof/report/instance.xml",
['http://www.xbrlsite.com/2021/testing/proof/fac/PROOF-BSC-IS01-CF1_schema.xsd'],
[newRulesFormat, removePrecondFallbacks, removeValueAssertionFallbacks, doNotRenderFAC,
cacheValidity(0)], Result).
```

		TERMS		
		Mappings		
		Type-subtype graph		
		Type-subtype table		
		All FACTS (technical listing)		
1	01-Balance Sheet	Structures	Facts	Pivots
2	02-Net Assets	Structures	Facts	Pivots
3	03-Comprehensive Income	Structures	Facts	Pivots
4	04-Comprehensive Income 2	Structures	Facts	Pivots
5	05-Cash Flow	Structures	Facts	Pivots
6	06-Prior Period Errors	Structures	Facts	Pivots
7	07-Changes in Equity	Structures	Facts	Pivots
8	08-Policies	Structures	Facts	Pivots
9	09-Variance Analysis	Structures	Facts	Pivots
10	10-Segment Revenues	Structures	Facts	Pivots
11	11-Stock Plan Activity	Structures	Facts	Pivots
12	12-Financial Highlights	Structures	Facts	Pivots
		Graph of reasoning		
		Blocks		
		Blocks Graph		
		Derivation Rules		
	All Rules	Calculations		
		Value Assertions		
		Messages		

Run Full Set of Rules, Load Dynamically

Runs all categories of verification as outlined above with the rules dynamically set at run time by the user of the Pacioli software application.

% Proof: Everything, Load Dynamically %

```
checkReport3("http://www.xbrlsite.com/2021/testing/proof/report/instance.xml",
['http://www.xbrlsite.com/2021/testing/proof/fac/PROOF-BSC-IS01-
CF1_schema.xsd','http://accounting.auditchain.finance/sbrm/sbrm-structure-rules-strict-def.xml',
'http://www.xbrlsite.com/2021/testing/proof/type-subtype/typeSubtype-rules-def.xml',
'http://www.xbrlsite.com/2021/testing/proof/disclosure-mechanics/dm.xsd',
'http://www.xbrlsite.com/2021/testing/proof/reporting-checklist/dr-rules-def.xml',
'http://www.xbrlsite.com/2021/testing/proof/fac/PROOF-BSC-IS01-CF1_schema.xsd'],
[newRulesFormat, removePrecondFallbacks, removeValueAssertionFallbacks, cacheValidity(0)], Result).
```

	TERMS			
	Mappings			
	Type-subtype graph			
	Type-subtype table			
	All FACTS (technical listing)			
1	01-Balance Sheet	Structures	Facts	Pivots
2	02-Net Assets	Structures	Facts	Pivots
3	03-Comprehensive Income	Structures	Facts	Pivots
4	04-Comprehensive Income 2	Structures	Facts	Pivots
5	05-Cash Flow	Structures	Facts	Pivots
6	06-Prior Period Errors	Structures	Facts	Pivots
7	07-Changes in Equity	Structures	Facts	Pivots
8	08-Policies	Structures	Facts	Pivots
9	09-Variance Analysis	Structures	Facts	Pivots
10	10-Segment Revenues	Structures	Facts	Pivots
11	11-Stock Plan Activity	Structures	Facts	Pivots
12	12-Financial Highlights	Structures	Facts	Pivots
13	FAC-1-Balance Sheet	Structures	Facts	Pivots
14	FAC-2-Net Assets	Structures	Facts	Pivots
15	FAC-3-Comprehensive Income Statement	Structures	Facts	Pivots
16	FAC-4-Comprehensive Income Statement	Structures	Facts	Pivots
17	FAC-5-Net Cash Flow	Structures	Facts	Pivots
	Graph of reasoning			
	Blocks			
	Blocks Graph			
	Derivation Rules			
	Calculations			
All Rules	Value Assertions			
	Disclosure Mechanics rules			
	Report Checklist Rules			
	Messages			

Run Rull Set of Rules, Load Statically in XBRL instance

Runs all categories of verification as outlined above with the rules hardcoded into the XBRL instance by the report creator.

% Proof: Everything, Load Statically in XBRL Instance %

```
checkReport3("http://www.xbrlsite.com/2021/testing/proof/report/instance_mtdrf.xml",
[], [newRulesFormat, removePrecondFallbacks, removeValueAssertionFallbacks, cacheValidity(0)],
Result).
```

		TERMS		
		Mappings		
		Type-subtype graph		
		Type-subtype table		
		All FACTS (technical listing)		
1	01-Balance Sheet	Structures	Facts	Pivots
2	02-Net Assets	Structures	Facts	Pivots
3	03-Comprehensive Income	Structures	Facts	Pivots
4	04-Comprehensive Income 2	Structures	Facts	Pivots
5	05-Cash Flow	Structures	Facts	Pivots
6	06-Prior Period Errors	Structures	Facts	Pivots
7	07-Changes in Equity	Structures	Facts	Pivots
8	08-Policies	Structures	Facts	Pivots
9	09-Variance Analysis	Structures	Facts	Pivots
10	10-Segment Revenues	Structures	Facts	Pivots
11	11-Stock Plan Activity	Structures	Facts	Pivots
12	12-Financial Highlights	Structures	Facts	Pivots
13	FAC-1-Balance Sheet	Structures	Facts	Pivots
14	FAC-2-Net Assets	Structures	Facts	Pivots
15	FAC-3-Comprehensive Income Statement	Structures	Facts	Pivots
16	FAC-4-Comprehensive Income Statement	Structures	Facts	Pivots
17	FAC-5-Net Cash Flow	Structures	Facts	Pivots
		Graph of reasoning		
		Blocks		
		Blocks Graph		
		Derivation Rules		
		Calculations		
	All Rules	Value Assertions		
		Disclosure Mechanics rules		
		Report Checklist Rules		
		Messages		

EXPERIMENTAL: Remove Fallback From FAC

Same as FAC verification except that a separate set of consistency and derivations rules are used which have had the fallback attribute removed. This is only for testing at this point in time. How fallbacks work in XBRL formula and whether they should be used are in question.

% Proof: EXPERIMENTAL, Remove All Fallbacks, nothing derived %
 checkReport3("http://www.xbrlsite.com/2021/testing/proof/report/instance.xml",
 ['http://www.xbrlsite.com/2021/testing/proof/fac_nofallback/PROOF-BSC-IS01-CF1_schema.xsd'],
 [newRulesFormat, renderFAOnly, cacheValidity(0)], Result).

	TERMS			
	Mappings			
	Type-subtype graph			
	Type-subtype table			
	All FACTS (technical listing)			
1	FAC-1-Balance Sheet	Structures	Facts	Pivots
2	FAC-2-Net Assets	Structures	Facts	Pivots
3	FAC-3-Comprehensive Income Statement	Structures	Facts	Pivots
4	FAC-4-Comprehensive Income Statement	Structures	Facts	Pivots
5	FAC-5-Net Cash Flow	Structures	Facts	Pivots
	Graph of reasoning			
	Blocks			
	Blocks Graph			
	Derivation Rules			
	All Rules	Calculations		
	Value Assertions			
	Messages			

% Proof: EXPERIMENTAL, Remove All Fallbacks, liabilities and losses derived %
 checkReport3("http://www.xbrlsite.com/2021/testing/proof/report/instance_TestFallbacks.xml",
 ['http://www.xbrlsite.com/2021/testing/proof/fac_nofallback/PROOF-BSC-IS01-CF1_schema.xsd'],
 [newRulesFormat, renderFAOnly, cacheValidity(0)], Result).

	TERMS			
	Mappings			
	Type-subtype graph			
	Type-subtype table			
	All FACTS (technical listing)			
1	FAC-1-Balance Sheet	Structures	Facts	Pivots
2	FAC-2-Net Assets	Structures	Facts	Pivots
3	FAC-3-Comprehensive Income Statement	Structures	Facts	Pivots
4	FAC-4-Comprehensive Income Statement	Structures	Facts	Pivots
5	FAC-5-Net Cash Flow	Structures	Facts	Pivots
	Graph of reasoning			
	Blocks			
	Blocks Graph			
	Derivation Rules			
	All Rules	Calculations		
	Value Assertions			
	Messages			

