

## Variance (a.k.a. Difference) Logic

The following is a summary of logic related to a variance<sup>1</sup>. A variance relates to the existence of a specific dimension, Scenario [Dimension], and how the members within that dimension are organized and characterized.

### Examples

XBRL Cloud: <https://xbrlsite.azurewebsites.net/2019/Prototype/conformance-suite/Production/1000-ConceptArangementPatterns/06-Variance/evidence-package/>

Luca Suite:

[https://luca.pacioli.ai/luca/view/0f24fd35e961e167a727b663c75a4c5ec9fb7eb86730d6292f46e6e180fc2018\\_V0FhqckSpZY/index](https://luca.pacioli.ai/luca/view/0f24fd35e961e167a727b663c75a4c5ec9fb7eb86730d6292f46e6e180fc2018_V0FhqckSpZY/index)

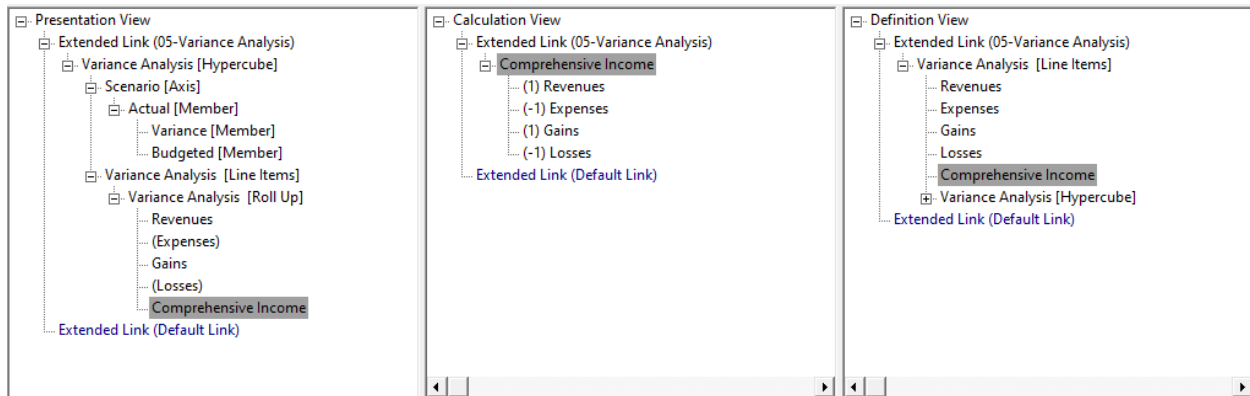
Test case: <http://xbrlsite.com/seattlemethod/platinum-testcases/27-TestCase-variance.xml>

Pesseract:

Rendering	Model Structure	Fact Table	Business Rules Structure	Business Rules Validation Results	Elements
<b>Component: (Network and Table)</b>					
Network	05 - Unknown - <b>Variance Analysis</b>				
Table	Variance Analysis [Hypercube]				
Reporting Entity [Axis]	GH259400TOMPUOLS65II <a href="http://standards.iso.org/iso/17442">http://standards.iso.org/iso/17442</a>				
Period [Axis]	2020-01-01/2020-12-31				
Unit [Axis]	USD				
	Scenario [Axis] ▲				
Variance Analysis [Line Items]	Variance [Member]	Budgeted [Member]	Actual [Member]		
<b>Variance Analysis [Roll Up]</b>					
Revenues	1,000	6,000	7,000		
(Expenses)	(1,000)	(2,000)	(3,000)		
Gains	250	750	1,000		
(Losses)	(1,000)	(1,000)	(2,000)		
Comprehensive Income	(750)	3,750	3,000		

The following is an example of a modeling of a roll up logical pattern using XBRL:

<sup>1</sup> Variance, <http://www.xbrlsite.com/seattlemethod/platinum-testcases/variance/>



### Brief Description

A **variance** (a.k.a. difference) concept arrangement pattern reconciles some reporting scenario with some other reporting scenario, the variance between reporting scenarios being the variance or changes. For example, an analysis which reconciles the concept sales for the reporting scenarios of actual and budgeted is a variance. The equation is:  $\text{actual} - \text{budget} = \text{variance}$ . Note that the actual member is represented as the dimension default because the actual would tie to the income statement in this case.

Concept [Aspect]	Period [Aspect]		
	2020-01-01   2020-12-31		
	Scenario [Axis]		
	Variance [Member]	Budgeted [Member]	Actual [Member]
<b>Variance Analysis [Roll Up]</b>			
Revenues	\$ 1,000	\$ 6,000	\$ 7,000
(Expenses)	(1,000)	(2,000)	(3,000)
Gains	250	750	1,000
(Losses)	(1,000)	(1,000)	(2,000)
<b>Comprehensive Income</b>	<b>\$ (750)</b>	<b>\$ 3,750</b>	<b>\$ 3,000</b>

A variance can be a specialization of other concept arrangement patterns such as a [Roll Up] as shown above, a [Set] or even a [Roll Forward]. A variance can always be discovered because it uses the Reporting Scenario [Dimension] that is related to the reporting profile because the semantics are not published by XBRL International.

### Axioms

1. A variance is a type of information block object.
2. A variance relates to the members of the Scenario [Dimension].
3. A variance relates to the members of a dimension.
4. The [Line Items] of a variance could be a [Roll Up], a [Set], a [Roll Forward].

5. The pseudo mathematical formula is:  $Actual = Budgeted - Variance$ . [CSH: This needs to be reworded and thought through.]
6. The calendar period type of each concept within the set of [Line Items] of a variance MUST be the same.
7. The data type of each concept within the set of [Line Items] of a variance MUST be the same. [CSH: I am pretty sure this is correct; but sometimes a modeling error where the wrong data type is used could cause issues.]
8. The units of each fact within a variance MUST be the same.
9. A variance is modeled using XBRL:
  - a. Presentation relations show an [Abstract] element within the [Line Items] which organizes the concepts into one of the known logical patterns. (i.e. Set, Roll Up, Roll Forward)
  - b. Calculation relations always exist, by definition, if the [Line Items] concept arrangement pattern logic is a Roll Up.
  - c. Definition relations always exist as XBRL dimensions is used to represent the members of the variance.
10. The Actual [Member] is always the dimension-default because typically a variance ties to actual reported values.

Variance of a Set:

Variance Analysis [Line Items]	Period [Axis]		
	2010-01-01 - 2010-12-31		
	Reporting Scenario [Axis]		
	Budgeted [Member]	Variance [Member]	Actual [Member]
<b>Variance Analysis [Hierarchy]</b>			
Sales	5,000	1,000	6,000
Cost of Goods Sold	3,000	1,000	4,000
Contribution Margin	2,000	(1,000)	1,000
Distribution Costs	1,000	0	1,000

Variance of a roll up showing mathematical relations:

Concept [Aspect]	Period [Aspect]		
	2020-01-01   2020-12-31		
	Scenario [Axis]		
	Variance [Member]	Budgeted [Member]	Actual [Member]
<b>Variance Analysis [Roll Up]</b>			
Revenues	1000	6000	✓ 7000
(Expenses)	1000	2000	✓ 3000
Gains	250	750	✓ 1000
(Losses)	1000	1000	✓ 2000
Comprehensive Income	✓ -750	✓ 3750	✓ 3000