

xBRL EUROPE

xBRL IT

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Calculations v2

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Overview

- Why do we need Calculations v2?
- Why not XBRL Formula?
- Calculations v2 key features
- Current status & how to get involved

Reports & calculations

- Financial reports include a series of tables
 - Balance sheet
 - Income statement
 - Cash flow statement
- Table represents a series of calculations
- Capturing these calculations as XBRL meta-data is useful

Calculation uses

- Validation (aka consistency checking)
- Infer unreported values
- Visualise the calculations present in a table

XBRL v2.1 summation-item limitations

- Only supports roll-up across concepts
- Inconsistency false positives caused by incomplete data sets (fact "bleed through")
- No value inference – calculations built to fit reported data
- Minor issues in application:
 - Disabled by duplicates
 - Rounding approach is broken

	May 31, 2018 (1)	November 30, 2017 (1)
ASSETS		
Lennar Homebuilding:		
Cash and cash equivalents	\$ 931,753	2,282,925
Restricted cash	17,509	8,740
Receivables, net	193,984	137,667
Inventories:		
Finished homes and construction in progress	9,374,290	4,676,279
Land and land under development	7,615,922	5,791,338
Consolidated inventory not owned	404,782	393,273
Total inventories	17,394,994	10,860,890
Investments in unconsolidated entities	960,676	900,769
Goodwill	3,451,994	136,566
Other assets	1,529,605	863,404
	24,480,515	15,190,961
Lennar Financial Services	1,943,125	1,689,508
Rialto	1,054,628	1,153,840
Lennar Multifamily	872,841	710,725
Total assets	\$ 28,351,109	18,745,034

Why not XBRL Formula?

- XBRL Formula can *validate* everything we need
- Difficult to understand what a given formula does

```
namespace eg = "http://example.com/taxonomy";
assertion CashReconciliation {
  variable $Changes {
    concept-name eg:IncreaseDecreaseInCashAndCashEquivalents;
  };
  variable $ClosingBalance {
    concept-name eg:CashAndCashEquivalents;
    instant-duration end $Changes;
  };
  variable $OpeningBalance {
    concept-name eg:CashAndCashEquivalents;
    instant-duration start $Changes;
  };
  test {$ClosingBalance eq $OpeningBalance + $Changes};
};
```

Roll-forward in XBRL Formula

Roll forward visualisation

Cash and Cash Equivalents (1 st Jan 2019)	€2,000
Increase (Decrease) in Cash and Cash Equivalents (2019)	<u>300</u>
Cash and Cash Equivalents (31st Dec 2019)	€2,300

Getting to this view from an XBRL Formula rule is very difficult

Structured calculations

- Majority of calculations in a financial report follow one of a small number of patterns
- Defining calculations in terms of a fixed set of patterns makes it easy to provide visualisations of calculations
- Structured calculations make it possible to understand relationships rather than just apply validations

Calculations v2 – supported patterns

- Concept roll up (aka summation-item)
- Period roll forward
 - closing balance = opening balance + period changes
- Dimensional aggregation
- Combinations of the above supported via value inference

Calculations v2 – the completeness problem

- Do we have enough facts to infer or validate a total?
- Humans know a calculation is complete because values are presented in a table
- XBRL facts are not tied to a section or table

Calculations v2 – the completeness solution

- Define sections in a taxonomy
- Associate facts with a section in a report
- Associate sections with applicable calculations

Calculations v2 – section benefits

- Where possible, sections can be defined in the base taxonomy
- Answers question "which facts are on the balance sheet?"
- Helps distinguish repeated occurrences of facts in iXBRL

Calculation v2 - rounding

- Calculations to be applied using interval arithmetic

€46m + €22m =>

Min: €45.5m + €21.5m = €67m

Max: €46.6m + €22.5m = €69m

Consistent with €67m, €68m, €69m

Or even €70m (nearest 10m)

Calculations v2 – value inference

- Calculations can be used to infer unreported values
- Allows calculations to flow through unreported intermediate sub totals
- Should reduce need to recreate calculation networks in an extension
- Provides more useful calculation meta-data, as facts are linked to nearest sub-total in taxonomy, not just nearest *reported* sub-total

Calculations v2 – current status

- Requirements document published
- Proposed solution agreed in January
- In the process of creating initial Public Working Draft

Calculations v2 – get involved!

- Please provide comments on published requirements document

<https://specifications.xbrl.org/>

- Get involved in the Base Specification Working Group to help develop the solution