



Best Practice in Essbase Business Rule Writing

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Agenda

- Introduction into problems
- Example
- FIX statement
- Calculations
- Create block approaches
- Aggregation

Relational DB vs. OLAP (calculations)

Task: Calculate profit for current scenario

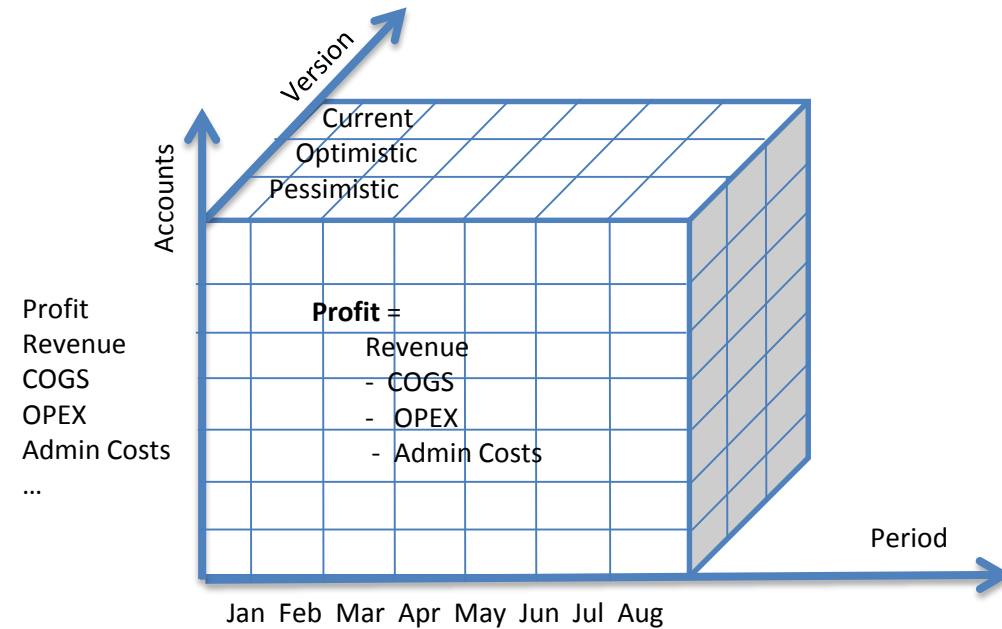
Financials

| Account | Version | Period | Amount |
|-------------|---------|--------|--------|
| Revenue | Current | Jan | 3000 |
| COGS | Current | Jan | -1500 |
| OPEX | Current | Jan | -400 |
| Admin_costs | Current | Jan | -400 |
| Revenue | Current | Feb | 3200 |
| COGS | Current | Feb | -1800 |
| OPEX | Current | Feb | -350 |
| Admin_costs | Current | Feb | -400 |
| ... | | | |

```
select
    sum (fin.amount) Profit
from Table1 fin
where
    fin.scenario = 'Current'
group by Period
```

Bussines formula

$$\text{Profit} = \text{Revenue} - \text{COGS} - \text{OPEX} - \text{Admin Costs}$$



```
FIX (
    "Current",           /*only current scenario */
    @relative("Periods",0), /*all periods */
)
"Profit" =
    + "Revenue"
    + "COGS"
    + "OPEX"
    + "Admin_costs";

endfix
```

Relational DB vs. OLAP (reporting)

Task: Calculate profit for current scenario

Financials

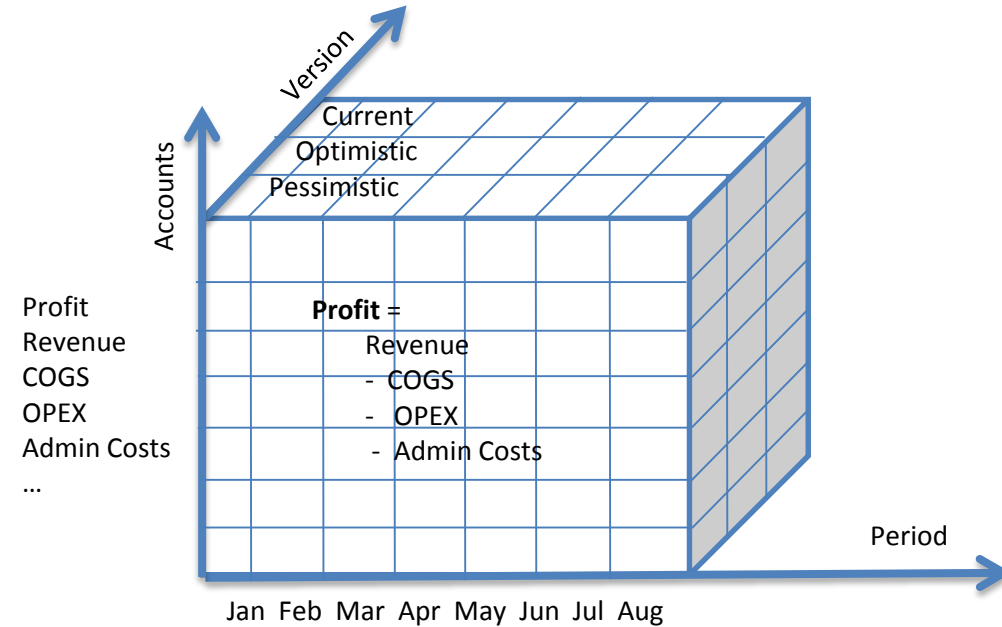
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| OPEX | Current | Feb | -350 |
| Admin_costs | Current | Feb | -400 |
| ... | | | |

```

select
    fin.account,
    fin.amount
from Table1 fin
where
    1=1
    and fin.scenario = 'Current'
    and fin.period = 'Jan'
    
```

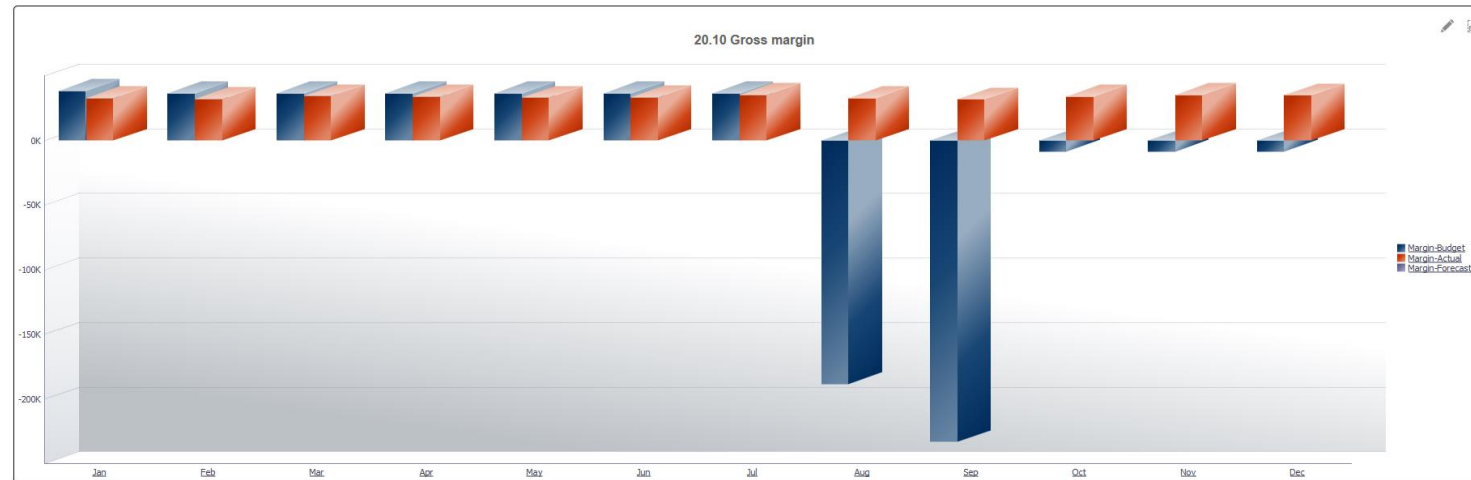
Bussines formula

$$\text{Profit} = \text{Revenue} - \text{COGS} - \text{OPEX} - \text{Admin Costs}$$



Period: Jan Scenario: Current

| | |
|-------------|---------|
| Revenue | 3 000 |
| COGS | - 1 500 |
| OPEX | - 400 |
| Admin_costs | - 400 |



Why it happens?

What is going on?



- Review data from different point of view
- Check assumptions
- Compare
- Recalculate

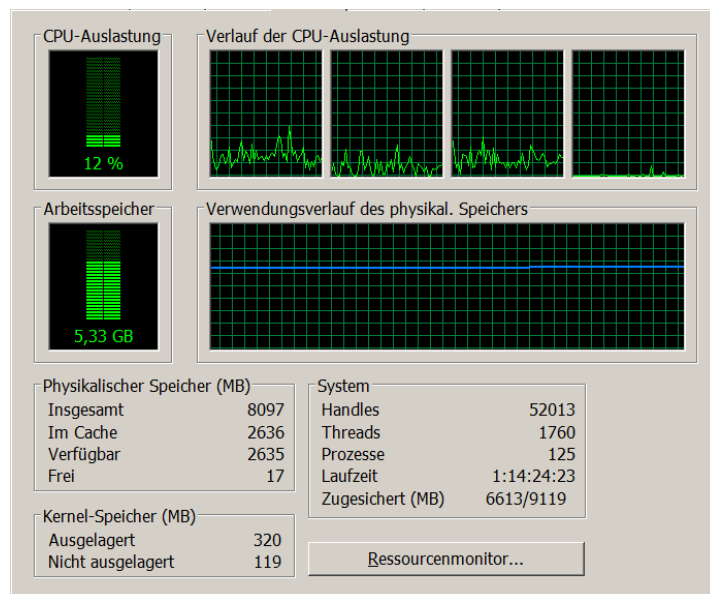
Before lose one's trains of thoughts

Performance

- Application Design
 - Dimensions
 - Hierarchies
 - Dense and Sparse
- Business Rules
 - FIX Statement
 - Calculations
 - Block Creation
 - Aggregation
- Forms
 - POV
 - Retrieving data
- Hardware

Extendibility

- Application Design
 - Quantity dimensions
 - Levels
 - Block size
- Business Rules
 - Code
- Forms
 - POV
 - Retrieving data
- Hardware



1. Structure

```
1  FIX (
2      "Dim1mbr1", "Dim1mbr2",      /*Aliases*/
3      "Dim2mbr1",                  /*Alias*/
4      "Dim3mbr2"                  /*Alias*/
5  )
6
7  FIX (
8      "Dim4mbr1"                  /*Alias*/
9  )
10
11 /* Comments to calc */
12     "Dim5mbr1" =                  /*Alias*/
13     "Dim5mbr2"                   /*Alias*/
14     + "Dim5mbr3"                 /*Alias*/
15     - "Dim5mbr4";               /*Alias*/
16
17     ENDFIX
18     Dim4mbr1 (
19         IF (
20             Conditions
21         )
22         /* Comments to calc */
23             "Dim4mbr1" =          /*Alias*/
24             Dim4mbr2->"Dim5mbr1" /*Alias*/
25             + "Dim4mbr3"->"Dim5mbr6"; /*Alias*/
26         ELSE
27             "Dim4mbr1" =          /*Alias*/
28             #missing;
29         ENDIF
30     );
31 ENDFIX
```



Level 1. Parameters



Level 2. Rule



Level 3. Calculation

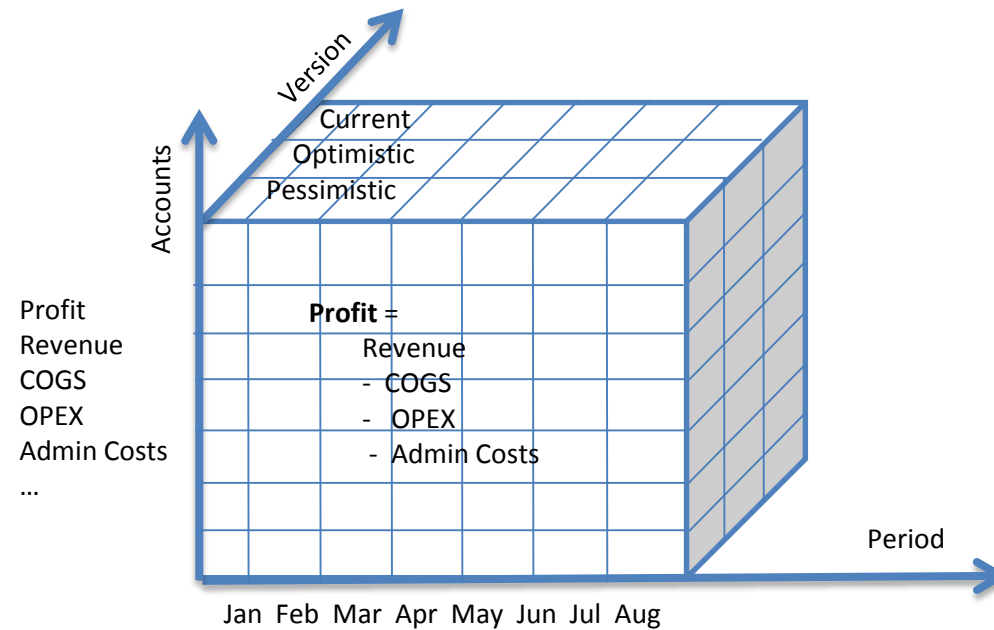
| Correct | Wrong |
|---|--|
| @LEVMBRS("Time Periods",0) AND @DESCENDANTS("Year Total") | Jan, Feb, Mar, Apr, may, Jun, Jul, Aug, Sep, Oct, Nov, Dec |
| @REMOVE(@Relative("YearTotal",0), "Dec") | Jan, Feb, Mar, Apr, may, Jun, Jul, Aug, Sep, Oct, Nov |
| @UDA("Account","FA_TO_PL_FA_1") | „PL_5000000“ |
| {Version} and "Target" | IF (@ISMBER(„Target“)) |
| IF (@ISMBER(„JAN“)) | FIX („JAN“) |
| @CHILDREN ("Year Total") | Q1,Q2,Q3,Q4 |
| @WITHATTR(Products, "==" , „New") | „Product_1“ |

"FIX – Sparse, IF - Dense".

Calculation

1. Dense Calculations

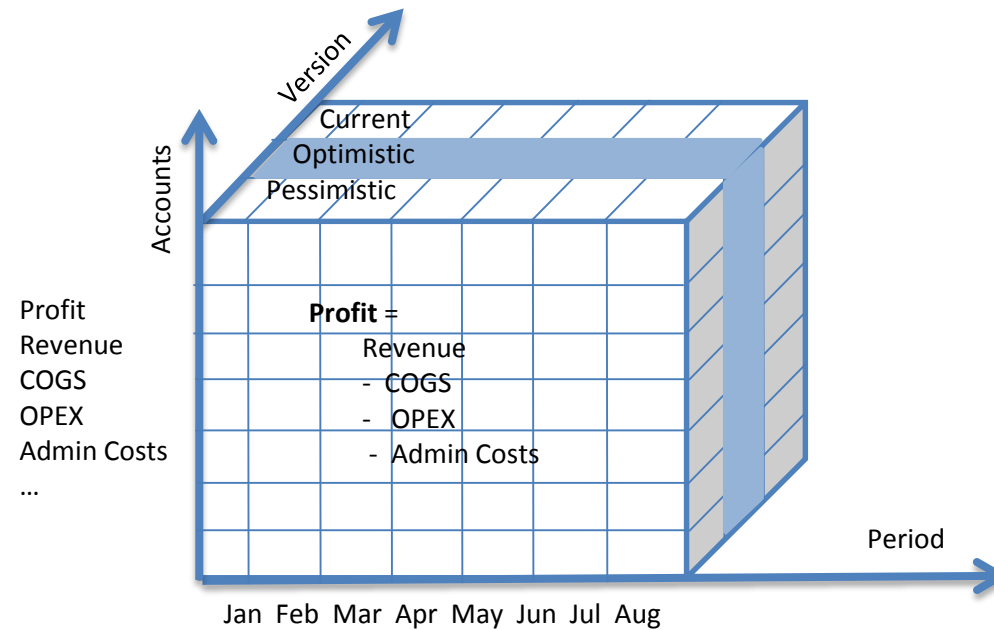
- Dense calculation are fast



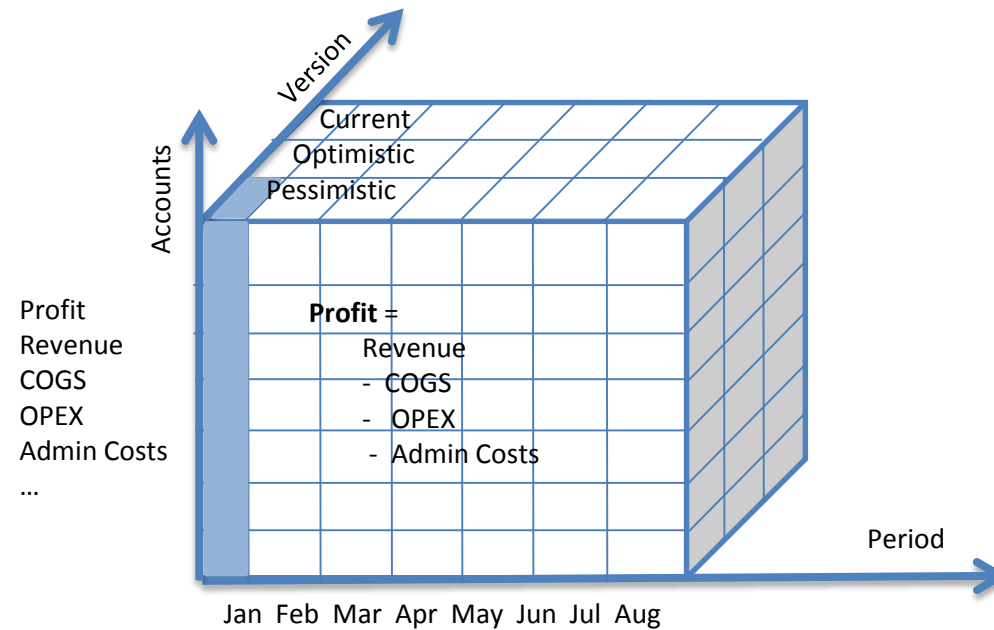
Calculation

2. Dense Calculations

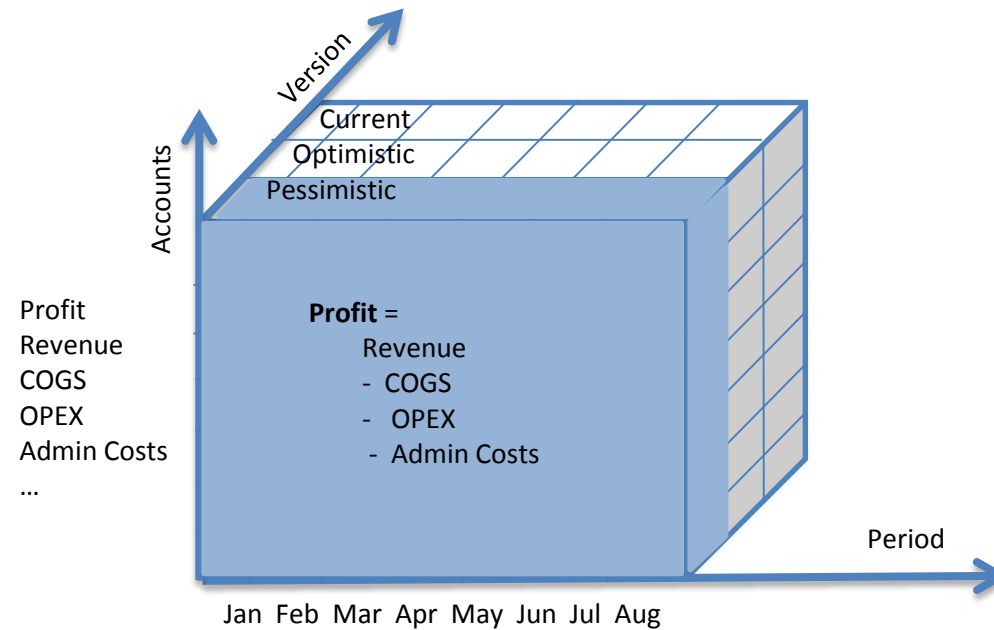
- Dense calculations are fast



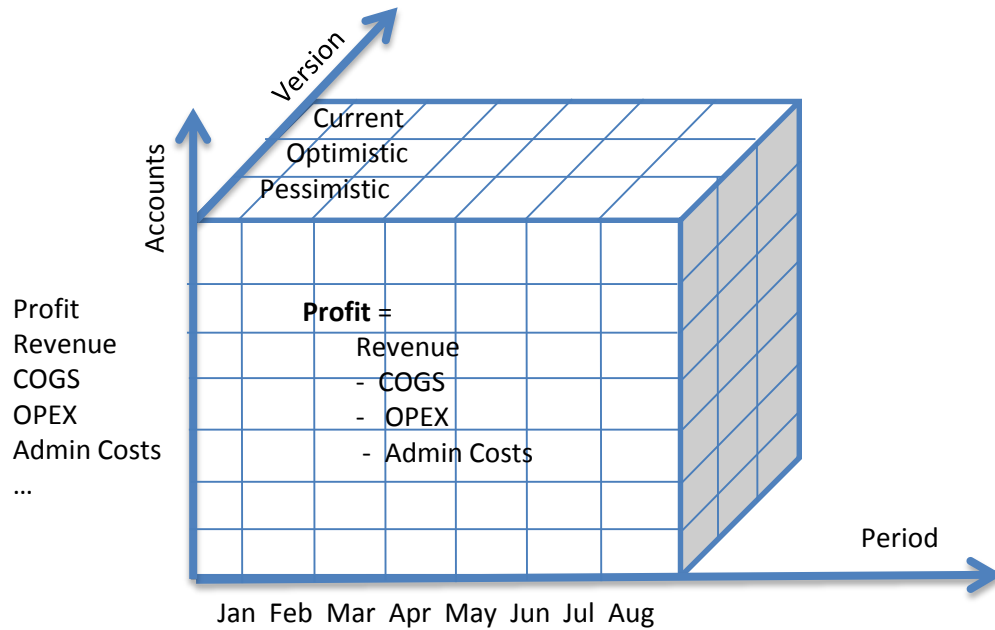
- Dense calculations are fast



- Dense calculations are fast



- **Dense calculation is faster!**



```
4  FIX (
5      "Revenue",                /*Alias*/
6      @Relative("YearTotal",0)  /*all months*/
7  )
8  /* Comments to calc */
9      "Optimistic" =            /*Optimistic version*/
10     "Current"                 /*Current version*/
11     * 1.2;                    /*Assumption*/
12  ENDFIX
```

```
15  FIX (
16     "Optimistic",              /*Optimistic version*/
17     @Relative("YearTotal",0)  /*all months*/
18  )
19  /* Comments to calc */
20     "Revenue" (                /* Account */
21      IF (
22         "Revenue"-> "Current"<>0  /* if data exist on Current version */
23         OR "Revenue"-> "Current" <> #MISSING /* if data exist on Current version */
24      )
25      "Revenue" =
26         "Revenue"-> "Current"
27         * 1.2;
28      ENDFIX;
29  );
30  ENDFIX
```

All calculations with Level0

Correct

```
36  FIX (
37      @relative ("Dim4mbr1",0)
38  )
39
40  /* Comments to calc */
41      "Dim5mbr1" =
42          "Dim5mbr2"
43          + "Dim5mbr3"
44          - "Dim5mnr4";
45  ENDFIX
```

Wrong

```
36  FIX (
37      @idescendants ("Dim4mbr1")
38  )
39
40  /* Comments to calc */
41      "Dim5mbr1" =
42          "Dim5mbr2"
43          + "Dim5mbr3"
44          - "Dim5mnr4";
45  ENDFIX
```

Calculation

7. Performance Improvement

Fewer members – best performance

| | A | B | C | D | E | F | G | H | I | J | K | L | M |
|----|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| 2 | Net income | | | | | | | | | | | | |
| 3 | EBT | | | | | | | | | | | | |
| 4 | EBIT | | | | | | | | | | | | |
| 5 | EBITDA | | | | | | | | | | | | |
| 6 | Revenue | | | | | | | | | | | | |
| 7 | Procurement of raw materials and goods | | | | | | | | | | | | |
| 8 | Change of stock | | | | | | | | | | | | |
| 9 | Direct costs | | | | | | | | | | | | |
| 10 | OPEX | | | | | | | | | | | | |
| 11 | Commercial expenses | | | | | | | | | | | | |
| 12 | Research and Development expenses | | | | | | | | | | | | |
| 13 | Administration expenses | | | | | | | | | | | | |
| 14 | Personnel expenses | | | | | | | | | | | | |
| 15 | Expenses for IT | | | | | | | | | | | | |
| 16 | Depreciation | | | | | | | | | | | | |
| 17 | Interest income and related income | | | | | | | | | | | | |
| 18 | Interest expense and similar expenses | | | | | | | | | | | | |
| 19 | Taxes | | | | | | | | | | | | |

Fewer members – best performance

12

18

| | A | B | C | D | E | F | G | H | I | J | K | L | M |
|----|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| 1 | | | | | | | | | | | | | |
| 2 | Net income | | | | | | | | | | | | |
| 3 | EBT | | | | | | | | | | | | |
| 4 | EBIT | | | | | | | | | | | | |
| 5 | EBITDA | | | | | | | | | | | | |
| 6 | Revenue | | | | | | | | | | | | |
| 7 | Procurement of raw materials and goods | | | | | | | | | | | | |
| 8 | Change of stock | | | | | | | | | | | | |
| 9 | Direct costs | | | | | | | | | | | | |
| 10 | OPEX | | | | | | | | | | | | |
| 11 | Commercial expenses | | | | | | | | | | | | |
| 12 | Research and Development expenses | | | | | | | | | | | | |
| 13 | Administration expenses | | | | | | | | | | | | |
| 14 | Personnel expenses | | | | | | | | | | | | |
| 15 | Expenses for IT | | | | | | | | | | | | |
| 16 | Depreciation | | | | | | | | | | | | |
| 17 | Interest income and related income | | | | | | | | | | | | |
| 18 | Interest expense and similar expenses | | | | | | | | | | | | |
| 19 | Taxes | | | | | | | | | | | | |

```
15 FIX (
16     "Optimistic",           /*Optimistic version*/
17     @Relative("YearTotal",0) /*all months*/
18 )
19 /* Comments to calc */
20 "Revenue" (                /* Account */
21     IF (
22         "Revenue"->"Current"<>0           /* if data exist on Current version
23     OR "Revenue"->"Current" <> #MISSING    /* if data exist on Current version
24     )
25     "Revenue" =
26         "Revenue"->"Current"
27         * 1.2;
28     ENDIF;
29 );
30 ENDFIX
```


Create Block

1. Best Performance Command

- DATACOPY
- @JExportTo и JImport.
- @CALCMODE within TOPDOWN.
- Aggregation on sparse dimension
- Sparse calculation
- @CreateBlock

Create Block

2. @CALCMODE

```
19  FIX (
20      "Dim1mbr1", "Dim1mbr2",          /*Aliases*/
21      "Dim2mbr1",                      /*Alias*/
22      "Dim3mbr2"                       /*Alias*/
23  )
24      "Dim4mbr1" (
25          ..... @CALCMODE (TOPDOWN);
26          ..... "Dim5mbr1"="Dim5mbr2"*1;
27      )
28
29  ENDFIX
30
```

Create Block

3. Sparse Calculation

- Sparse calculation without cross-dim

```
19  FIX (
20      "Dim1mbr1", "Dim1mbr2",          /*Aliases*/
21      "Dim2mbr1",                    /*Alias*/
22      "Dim3mbr2"                      /*Alias*/
23  )
24      "Dim4mbr1" (
25          .....
26          "Dim5mbr1" -> "Dim6mbr1" = 0;
27          .....
28      );
29  .....
30  ENDFIX
```

Create Block

4. @CreateBlock

```
1  FIX (
2      "Dim1mbr1", "Dim1mbr2",      /*Aliases*/
3      "Dim2mbr1",                  /*Alias*/
4      "Dim3mbr2"                   /*Alias*/
5  )
6      Dim4mbr1 (
7          IF (
8              Conditions
9          )
10         /* Comments to calc */
11         @CREATEBLOCK ("Dim4mbr1");
12         ENDIF
13     );
14
15 ENDFIX
```

Create Block

5. Low Performance

Better to avoid:

- SET CREATENONMISSINGBLK ON
- @ALLOCATE
- @XREF
- @XWRITE

Aggregation

1. Tips

Better to avoid:

- Aggregation
- Complex multi level hierarchies
- Flat hierarchies
- Use ASO for reporting



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