XBRL business intelligence and its consequences for abstract modelling

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Introduction
Why does analytics and data modelling belong together?

• How is data analysed?
  • Through semantics
• Semantics enable conclusions
• Bring data into a different context
• See the bigger picture

• Methods
  • combining, grouping, separating facts
  • showing them next to each other
  • Time series

• Successful analytics depends on semantics as a key component
Introduction
Why does analytics and data modelling belong together?

- XBRL is know as carrier of semantics
- Most of the semantics are in the meta framework (taxonomy)
  - Labels-, references-, presentation-, definition-, calculation-, formula linkbase
- Some are also in the instance
  - Period, entity name / identifier, typed dimensions

- XBRL is very flexible in the way taxonomy designers can express those semantics (taxonomy architecture, filing manuals)
  - Validations (Calculation vs. Formula)
  - Presentation (Mirror presentation and definition + inlineXBRL vs. rendering linkbase vs. table linkbase)?
  - **Providing meaning to concepts** (reference to underlying standard vs. dimensional split)
  - Grouping of information (tuples vs. dimensions)
  - …
Introduction
Why does analytics and data modelling belong together?

• Providing meaning to concepts
Where are the semantics stored in both approaches?

Non-dimensional data modelling

- Personnel expenses
  - IAS 19.46, IFRS 2.51(a)

- All semantics is in the reference (single xbrl component)

Dimensional data modelling

- Expense
  - Personnel Expense
    - Domestic
      - German GAAP
        - Related to payment services

- Semantics is split up on different dimensions / members (multiple xbrl components)
Introduction
Why does analytics and data modelling belong together?

• Architectural decisions result in a data model of XBRL taxonomy which does effect the ways in which the data can be analysed afterwards!

• Many taxonomy creators are not aware of that

• General approach taken by taxonomy creators:
  • Analyse the reporting requirements written down in the literature
  • Build a taxonomy which reflex the requirements appropriately
  • Consult / review the taxonomy
  • Publish the taxonomy

• Not included in the taxonomy process:
  • What conclusions are expected from the data and how is it going to be analysed? Why is the literature requiring something and is the data model supporting that?
  • Analytical questions have not been included into the taxonomy due process
    • Lately questions arised in the XBRL world: Who is using the data?
  • If taxonomy creators (mostly regulators) do not have a strategy for analysing the data and reflect that in the data model of the taxonomy stakeholders have a much harder time to analyse that data
Introduction
How to analyse the data?

- Get data into an analytical system:
  - Build an analytical system on top of XBRL
  - Ensure that XBRL taxonomy data model fits into already existing analytical systems

<table>
<thead>
<tr>
<th>Build analytics on top of XBRL taxonomy</th>
<th>Ensure that XBRL taxonomy data model fits into already existing analytical systems</th>
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<tbody>
<tr>
<td>+ very flexible</td>
<td>- Additional requirements for the XBRL taxonomy</td>
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<td>- Reinvent the wheel, can not leverage on decades of performance improvements in the BI sector</td>
<td>+ leverage on performance</td>
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<td>- Proprietary solution does not fit into the overall company IT landscape</td>
<td>+ Protect investments already made</td>
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<td></td>
<td>+ people are familiar with tools</td>
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<td>Small companies with small user group</td>
<td>Huge companies with lot of users</td>
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Data Modelling approaches for taxonomies
How to analyse the data?

• Comparing different taxonomy data modelling approaches

Non-dimensional • Dimensional

IFRS 2006 • IFRS 2011 • FINREP / COREP 2013

US GAAP
Data Modelling approaches for taxonomies
How to analyse the data?

• Non-dimensional data modelling

• Analysis methods
  • Comparing individual items +
  • Time series +
  • Grouping items o
    • Grouping of instances +
    • Grouping of concept meaning –

• More separate semantics lead to a more granular analysis results
  • Time is separate in the instance
  • Concepts are independent
  • But meaning from the reference is not
Data Modelling approaches for taxonomies
How to analyse the data?

- Dimensional approach – huge advantage – more semantics separate

**Dimensional data modelling**

- Administrative expenses
  - Personnel Expense
    - Wages and salaries
    - Social security, post-employment

- Total
  - Domestic
  - Foreign

- Analysis on
  - Members (slicing and dicing)
  - On hierarchies of members
Data Modelling approaches for taxonomies
How to analyse the data?

• Cundus AG is developing the “Taxonomy driven data analysis approach”

• From 2013 COREP / FINREP is becoming mandatory in Europe
  • Fully dimensionally taxonomy

• DEMO
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