
# 23rd XBRL International Conference

"XBRL: Enhancing Business Performance"
25-27 October 2011
Montreal, Quebec, Canada

Academic Track

# Towards Guidelines of Modeling for XBRL

Claudia Koschtial

# Agenda

- Research Goal
- Some Decisions
- Work of the Integration Layer
- Conclusions

# Research Goal

- Visual models are used to gain an ab
- They are bringing together pe
  business background.
- What means „model
- Is an XBRL m
  environm
- XBR

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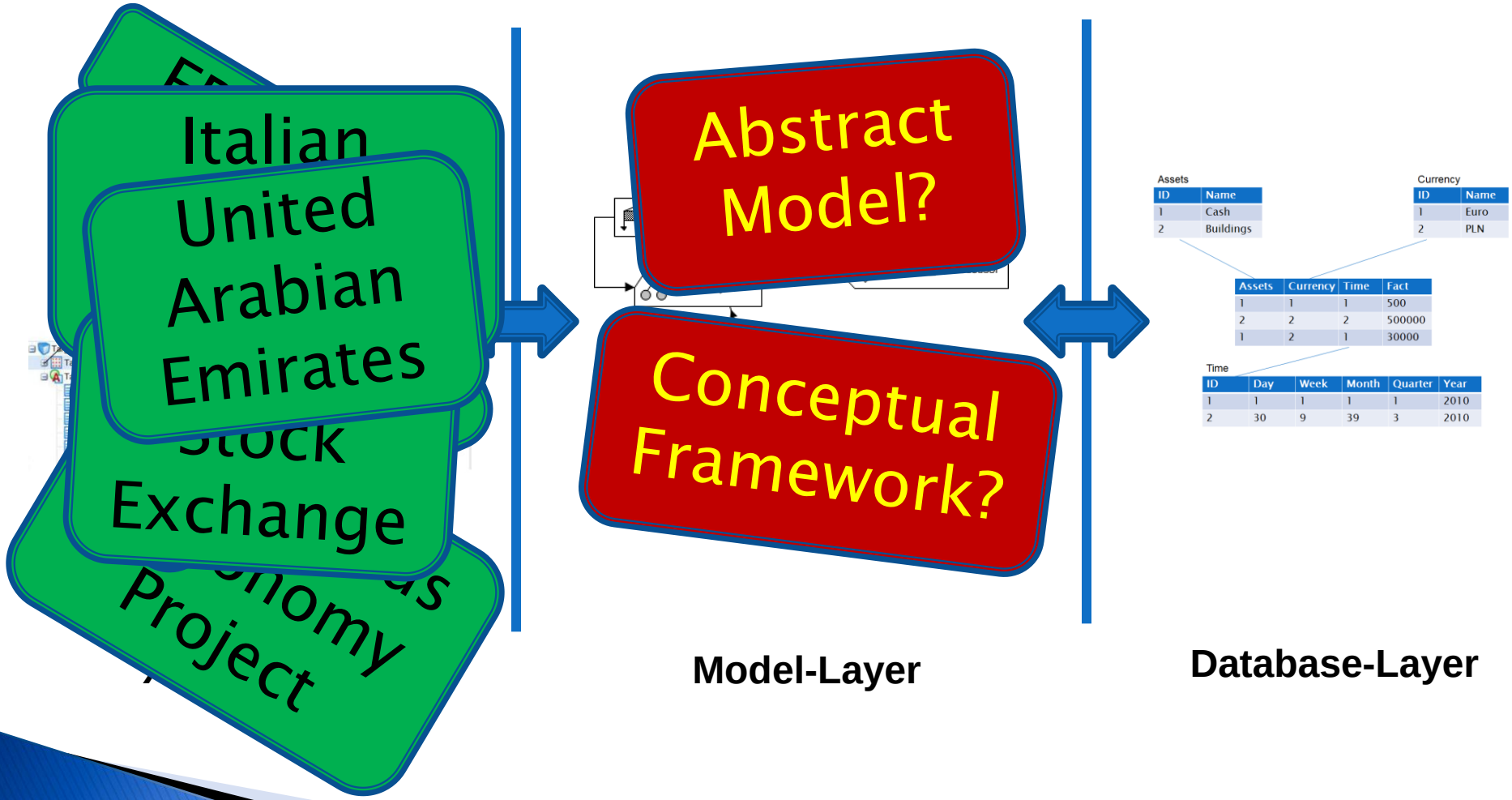
onal layer between an XBRL file and a

a!

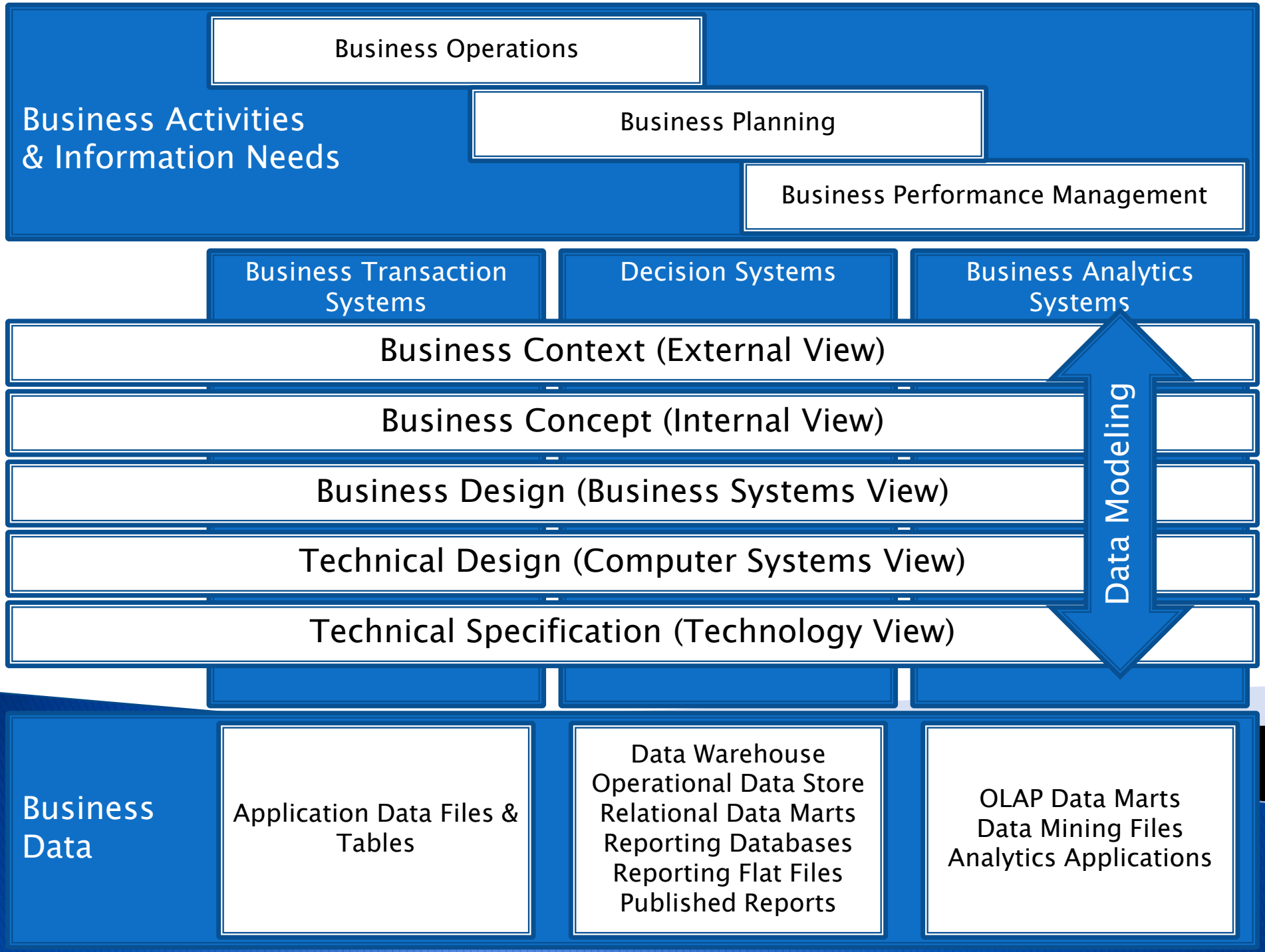
This demands *Guidelines of Modeling for XBRL.*

# Research Goal




**Model-Layer**

**Database-Layer**


Business Operations
Business Activities
& Information Needs
Business Planning
Business Performance Management
Business Transaction Systems
Decision Systems
Business Analytics Systems
Business Context (External View)
Business Concept (Internal View)
Business Design (Business Systems View)
Technical Design (Computer Systems View)
Technical Specification (Technology View)
Data Modeling
Business Data
Application Data Files & Tables
Data Warehouse
Operational Data Store
Relational Data Marts
Reporting Databases
Reporting Flat Files
Published Reports
OLAP Data Marts
Data Mining Files
Analytics Applications

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# Some Decisions

- Models in context of reporting are known and often discussed in Business Intelligence.
- Object Management Group (OMG) is proposing the Unified Modeling Language (UML).
- Reporting models are usually multidimensional and XBRL Dimensions specification shows already that the basic understanding of XBRL is multidimensional as well.

# Some Decisions

- OMG uses UML for specifying the Common Warehouse Metamodel (CWM).
- But, UML is not used for the semantical modeling itself.
- Entity Relationship Modeling (ERM) is just for modeling relational databases and due to this limited in presenting additional semantic enhancements.

# Some Decisions

- As shown at XBRL Paris (Felden/Piechocki), the Application Design for Analytical Processing Technologies (ADAPT) by Dan Bulos is able to cover XBRL and database modeling demands.
- This model based integration layer should lead to a prototype in Microsoft Visio.

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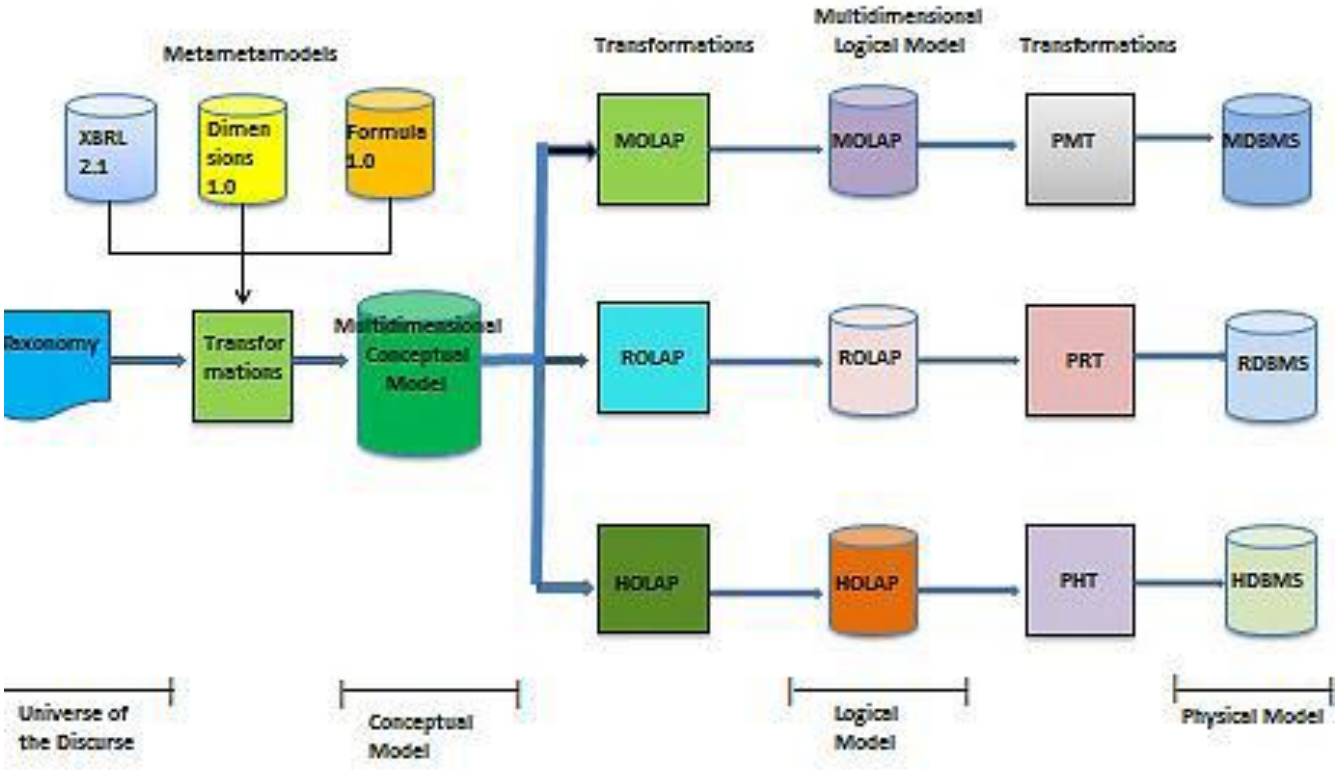
# Work of the Integration Layer

- **Guidelines of Modeling (by Becker/Schütte):**
  - The Principle of Construction Adequacy.
  - The Principle of Language Adequacy.
  - The Principle of Economic Efficiency.
  - The Principle of Clarity.
  - The Principle of Systematic Design.
  - The Principle of Comparability.

# Work of the Integration Layer

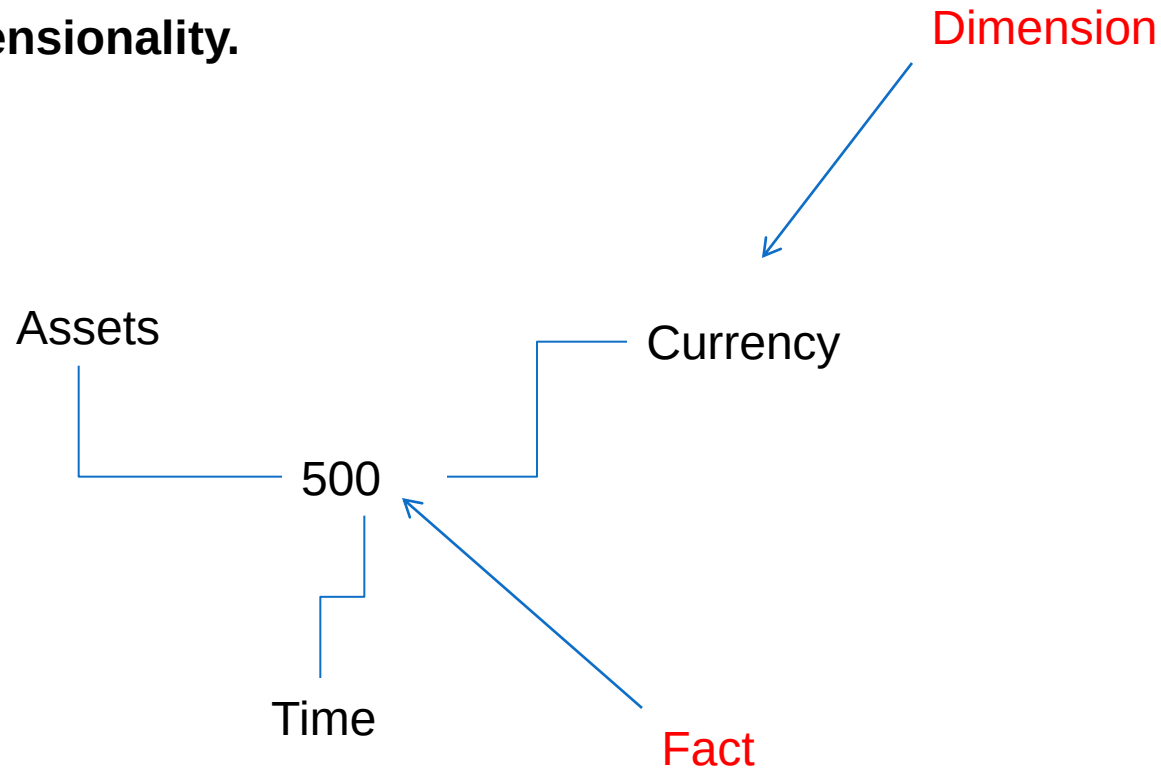
**Relationship between XBRL and OLAP structures.**




**Taken from:**
XBRL AND THE MULTIDIMENSIONAL DATA MODEL
Ignacio Santos, Elena Castro
*Carlos III University of Madrid, Computer Science Department. Avda. de la Universidad Nº 30, 28911 Leganés (Madrid), Spain.*

# Work of the Integration Layer

**Multidimensionality.**



# Work of the Integration Layer

**Assets**

| ID | Name |
|---|---|
| 1 | Cash |
| 2 | Buildings |

**Currency**

| ID | Name |
|---|---|
| 1 | Euro |
| 2 | CND |

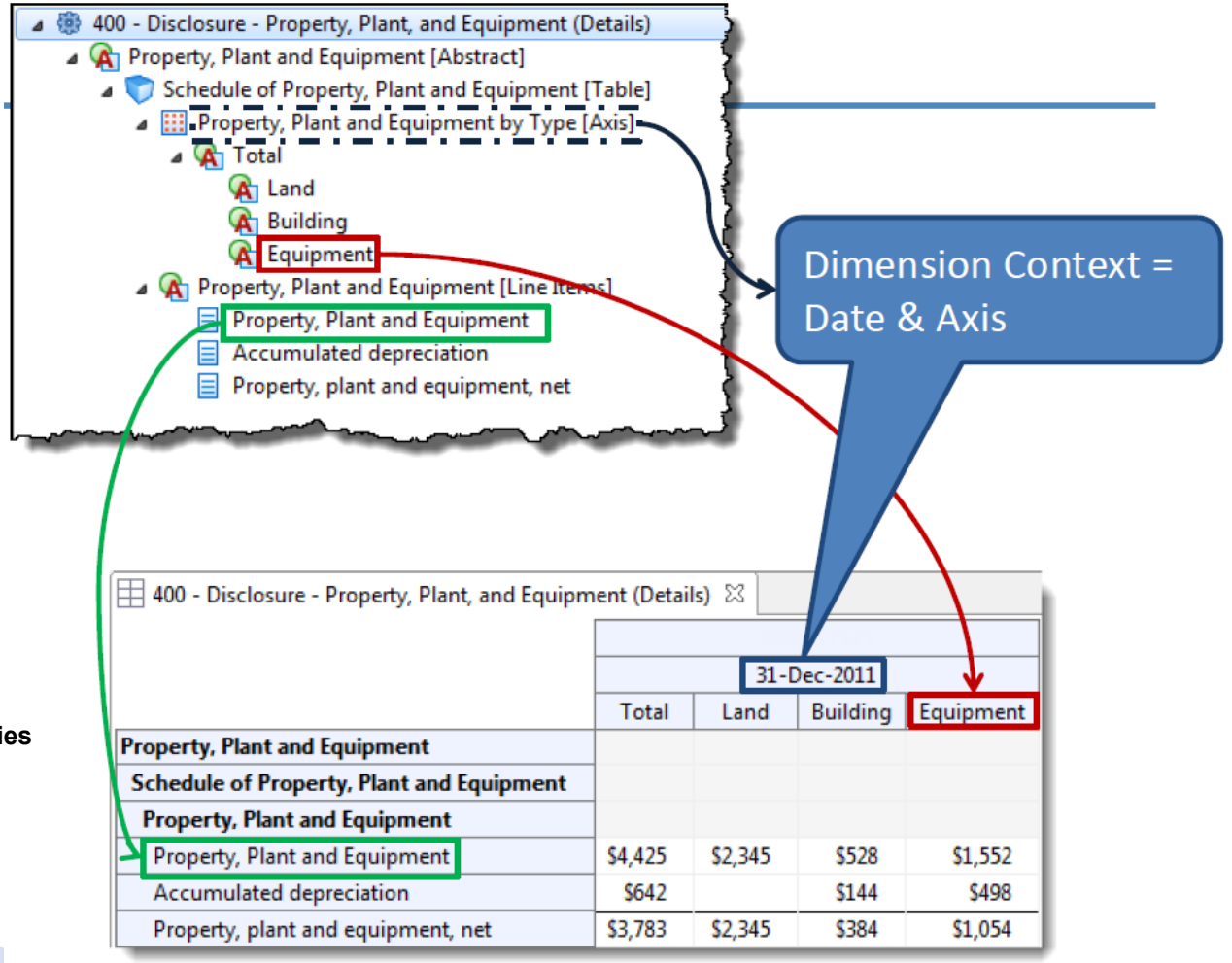
| Assets | Currency | Time | Fact |
|---|---|---|---|
| 1 | 1 | 1 | 500 |
| 2 | 2 | 2 | 500000 |
| 1 | 2 | 1 | 30000 |

**Time**

| ID | Day | Week | Month | Quarter | Year |
|---|---|---|---|---|---|
| 1 | 1 | 1 | 1 | 1 | 2011 |
| 2 | 30 | 9 | 39 | 3 | 2011 |

# Work of the Integration Layer

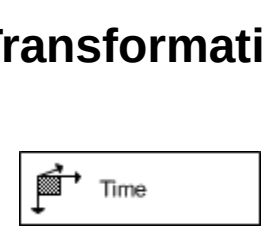
**IN FOCUS: Proposed 2012 US GAAP Financial Reporting Taxonomy and Using XBRL Tables – October 4, 2011 Illustrative modeling for company extension taxonomy.**

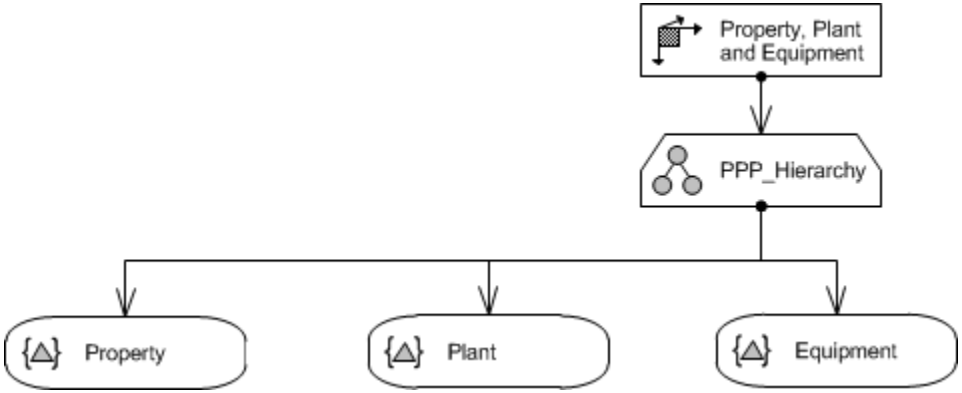


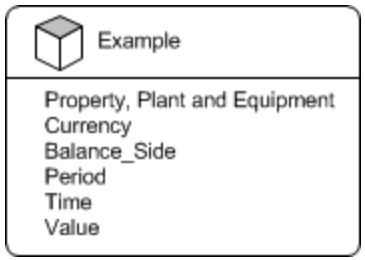

Taken from:
IN FOCUS: The FASB's Educational Webcast Series
*Summary of Changes for the Proposed 2012 Taxonomy and Using XBRL Dimensions*

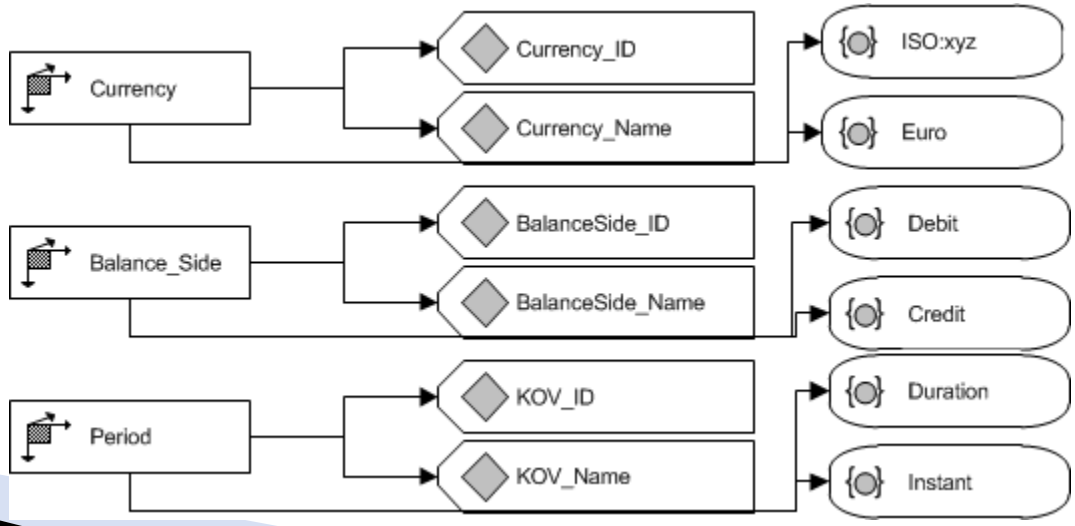
# Work of the Integration Layer

**Transformation into an ADAPT model.**



# Work of the Integration Layer

**Transformation into a database schema (relational algebra).**

R Time (…)

R DIM_Property, Plant and Equipment (PPE_ID,  PR_ID, PL_ID, EQ_ID)

R SUBDIM_Property (PR_ID, PR_Name)

R SUBDIM_Plant (PL_ID, PL_Name)

R SUBDIM_Equipment (EQ_ID, EQ_Name)

R DIM_Currency (C_ID, C_Name)

R DIM_Balance_Side (BS_ID, BS_Name)

R DIM_Period (PE_ID, PE_Name)

R FACT_Example (ID, PPE_ID, C_ID, BS_ID, PE_ID, Value)

# Work of the Integration Layer

**Transformation from a database schema.**

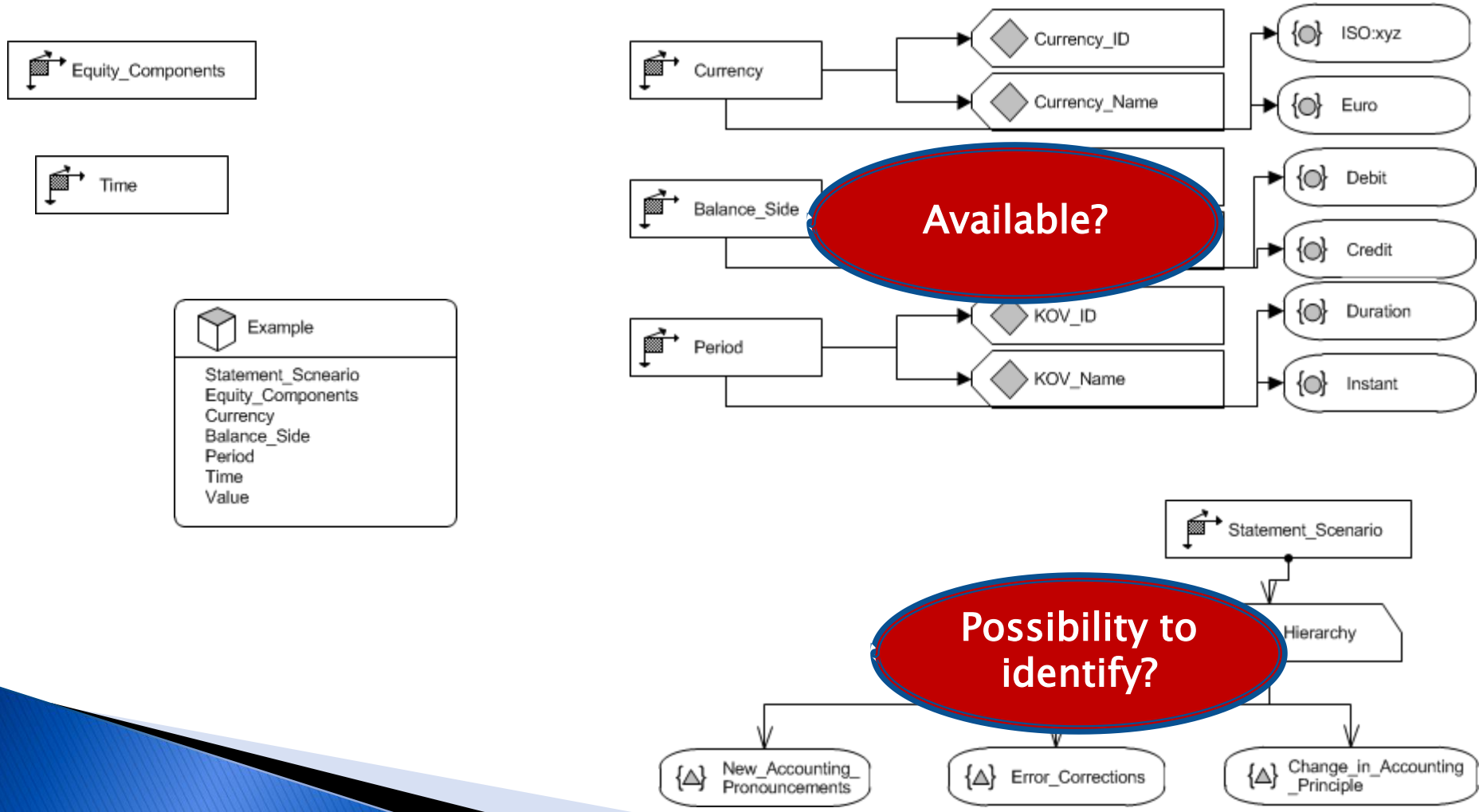
→Dimension and fact tables can be identified.

→But, there is no guarrantee that it is correct.

→Due to the reason that there are no defined transformation rules from a multidimensional model to a database, the „way back“ is not clearly defined.

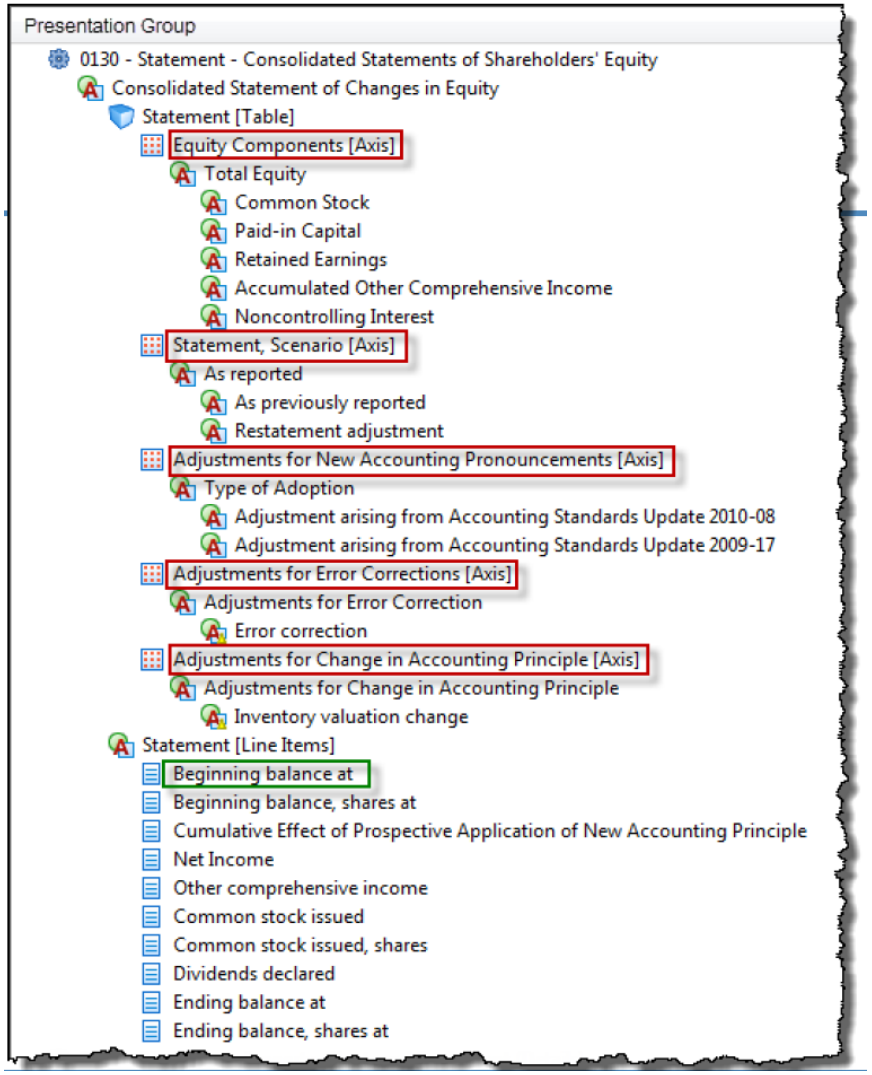
# Work of the Integration Layer

**Transformation into an ADAPT model.**



# Work of the Integration Layer

**Dimensions used for retrospective adjustment**

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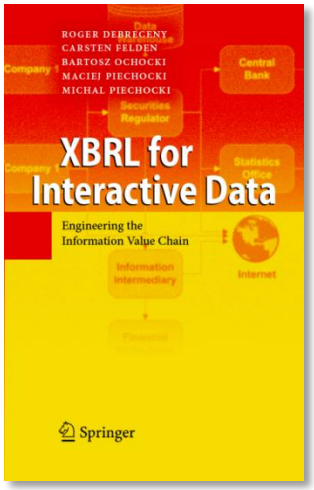
# Conclusions

- The Financial Reporting Taxonomy Architecture (FRTA) is already a best practice modeling guide.
- But textual modeling is not in accordance to the GOM.
- Database modeling experiences has shown that visual models tied technical and business people together and more GOM adequate.

# Conclusions

- To increase the flexibility and usage, an automated generation of a database schema out of an XBRL taxonomy vice versa is necessary.
- Due to tool support, a semantical model can integrate the XBRL and the database world.
- Next steps are the definition of transformation rules from XBRL to ADAPT (easy) and ADAPT to a relational database schema (difficult).

# Thank you very much!





Questions?


***E-Mail:***
*claudia.koschtial@bwl.tu-freiberg.de*