

# UML Meta model for DPM

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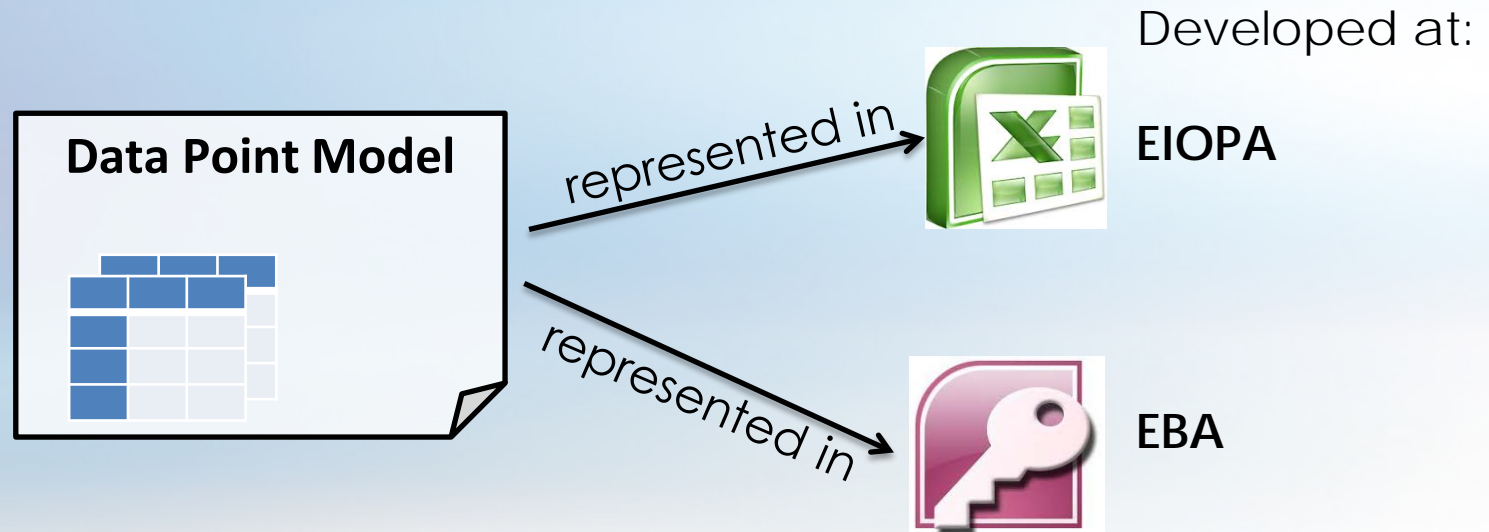
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# UML Meta model for DPM

## Definition of a Data Point Model

- ❖ DPM is a dictionary of business concepts and their properties
- ❖ used in tables (explicitly indicated in annotation)
- ❖ identifying the content of every data point and
- ❖ its relation to other data points.



# UML Meta model for DPM

## Example: Annotated COREP template for MKR SA EQU

MKR SA EQU		MARKET RISK: STANDARDISED APPROACH FOR POSITION RISK IN EQUITIES							Dimensional values		
National market:		GA/CMA/Not applicable/All geographical areas (example)					PL/PL/Trading book				
		POSITIONS							RISK CAPITAL CHARGE (%)	OWN FUNDS REQUIREMENTS	TOTAL RISK EXPOSURE AMOUNT
		ALL POSITIONS		NET POSITIONS		POSITIONS SUBJECT TO CAPITAL CHARGE					
		LONG	SHORT	LONG	SHORT						
		010	020	030	040	050	060	070			
010	<b>EQUITIES IN TRADING BOOK</b>										
020	General risk										
021	Derivatives										
022	Other assets and liabilities										
030	Exchange traded stock-index futures broadly diversified subject to particular approach										
040	Other equities than exchange traded stock-index futures broadly diversified										
050	Specific risk										
080	Particular approach for position risk in CIUs										
090	Additional requirements for options (non-delta risks)										

**Data Point**  
r30c10

**Dimensional values**

- Metric
- AP - Approach
- BA - Basis
- MC - Main Category
- PI - Positions in the instrument
- PL - Portfolio
- RT - Risk Type

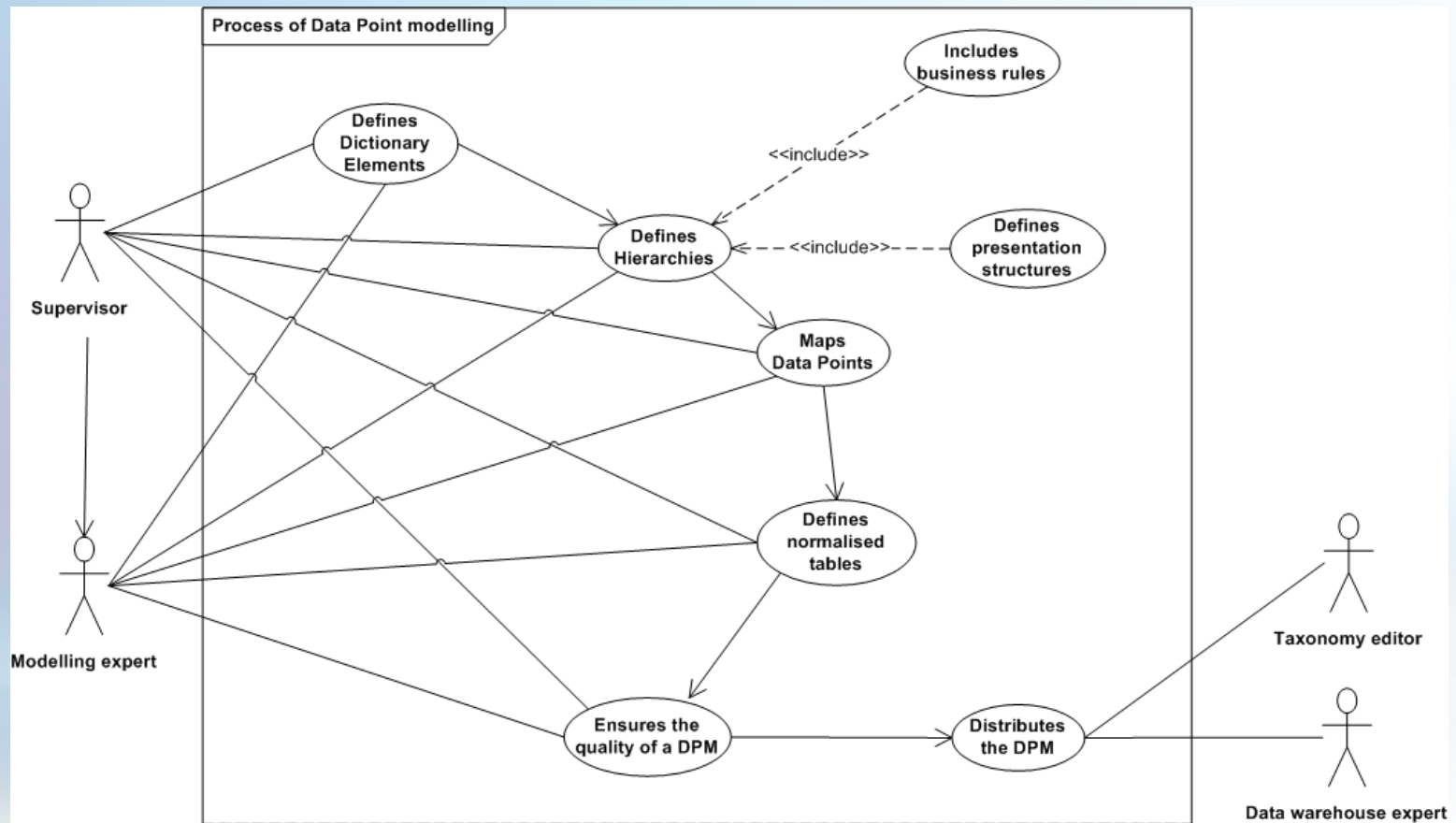
mi1 - Gross value
1 - Standardised approach
1 - Exposures
4 - Exchange traded stock-index futures
1 - Long position
2 - Trading book
2 - General risk for equity instruments

Equity AP-AP/Standard  
ised approach  
MKR EQU AP-AP/Standard  
al risk ised approach  
General AP-AP/Standard  
r equity ised approach  
General AP-AP/Standard  
r equity ised approach  
ments  
General AP-AP/Standard  
r equity ised approach  
ments  
General AP-AP/Standard  
r equity ised approach  
Specific AP-AP/Standard  
r equity ised approach  
ments  
Market AP-AP/Particula  
st look- r approach for  
gh CIU CIUS  
Non- AP-AP/Approach  
risks h for Options

A Data Point as a financial concept is characterized by defining its basic financial meaning (nature) and specifying information of breakdowns in which it is described in different tables or paragraphs of documentation.

# UML Meta model for DPM

## Process of Data Point Modelling



# UML Meta model for DPM

## Background for the development

- ❖ ambiguity in the understanding of the concept of a Data Point Model
- ❖ missing rule set to be followed in the process of Data Point modelling
- ❖ different constraints depending on the field of application
- ❖ missing abstraction layer to ease the understanding for IT experts
- ❖ missing description of the relations between the different components of a Data Point Model

# UML Meta model for DPM

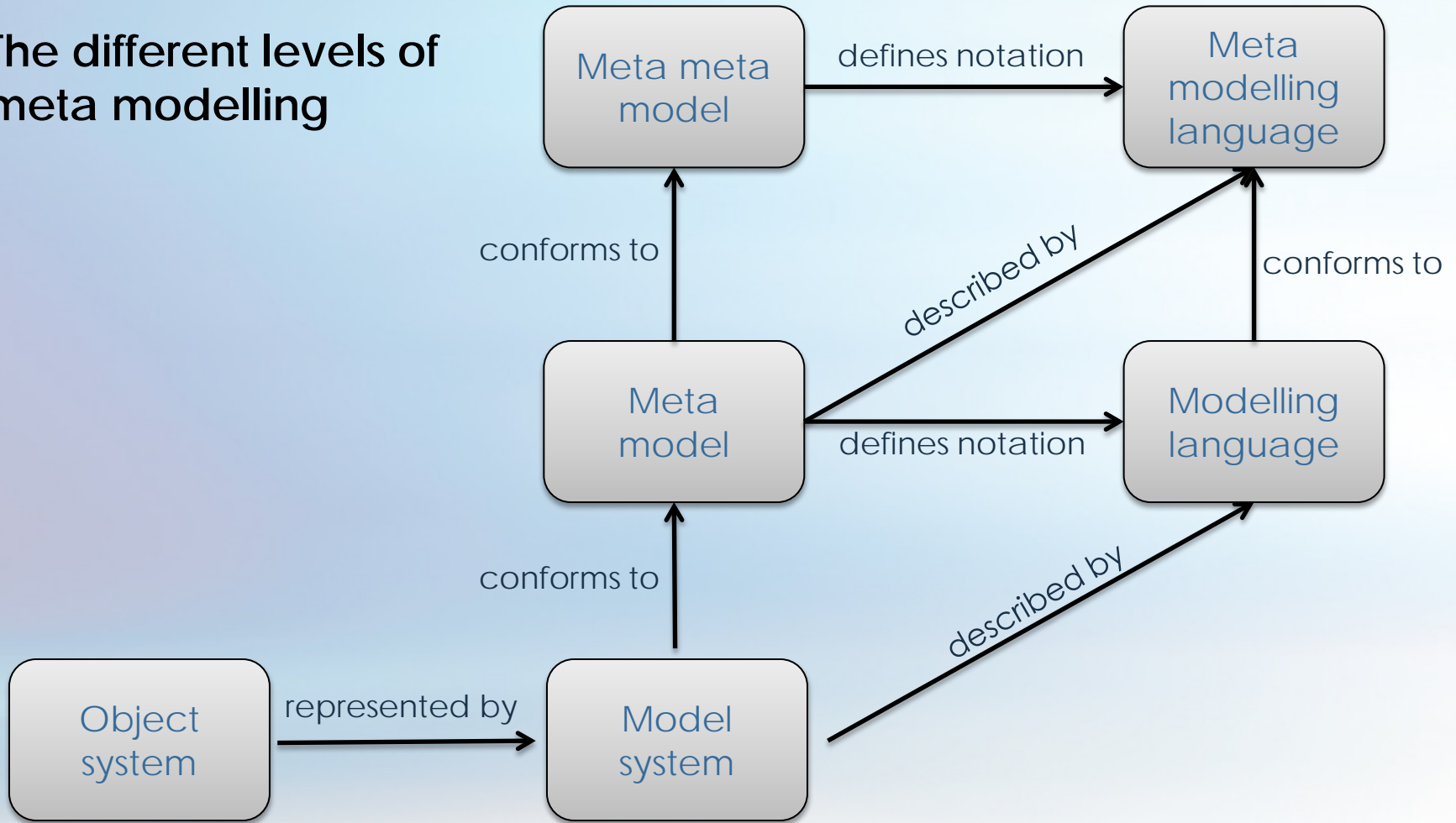
## The Data Point Meta Model should provide

- ❖ (1) the model components for the creation of a formal model on sets of data points for European supervisory reporting frameworks,
  - ❖ (2) rules on how to combine these components and
  - ❖ (3) the meaning (semantic) of the components and their relations.
- 
- ❖ Similar to a model construction kit for toys it provides the modelling principles with all characteristics available for use by the modeller.



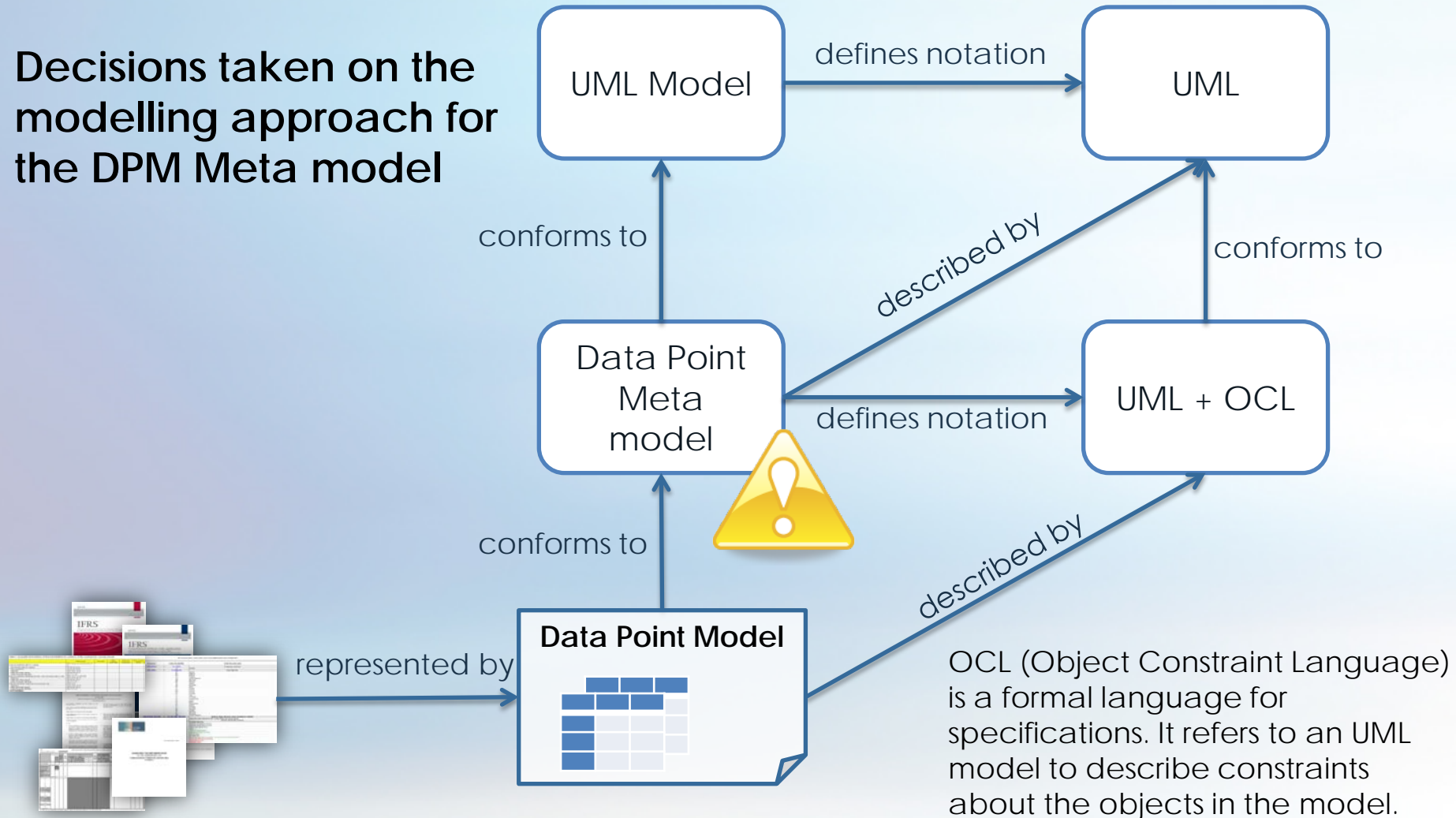
# UML Meta model for DPM

The different levels of meta modelling



# UML Meta model for DPM

Decisions taken on the modelling approach for the DPM Meta model

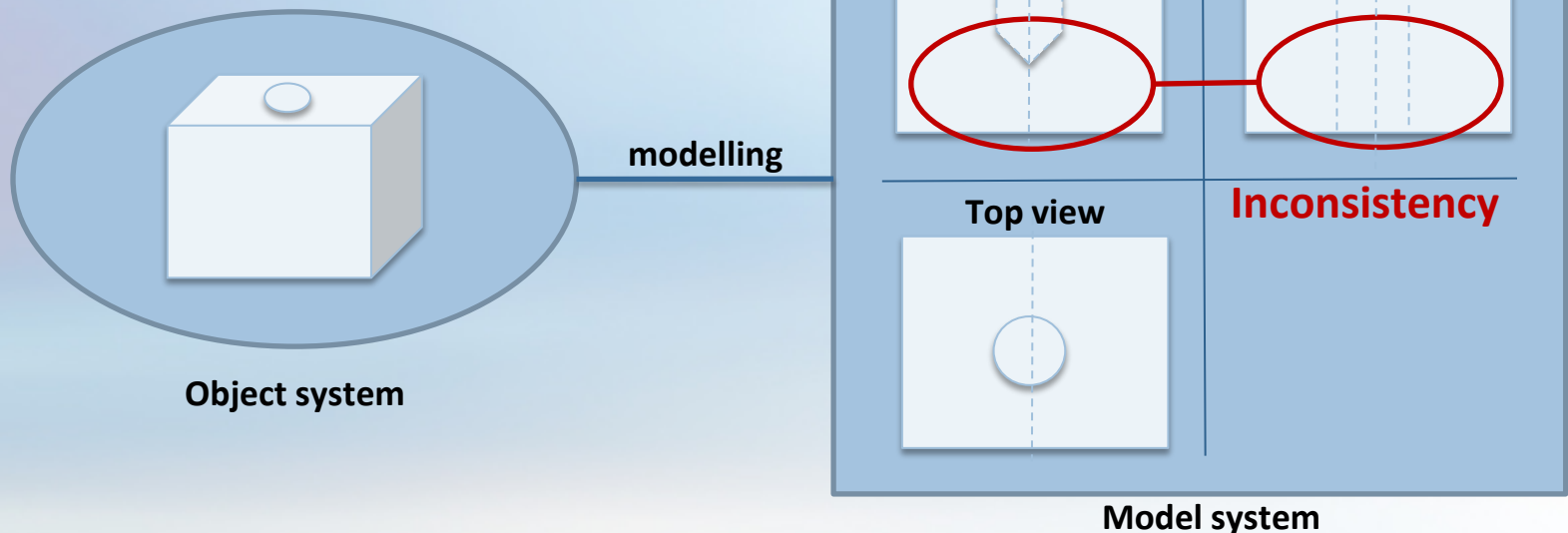




# UML Meta model for DPM

## Different perspectives on the meta model

- ❖ Perspectives reduce the complexity and provide views on different aspects of the object system
- ❖ Perspectives needed to be consistent and complete as a whole





# UML Meta model for DPM

## Definition of constraints

- ❖ General constraints on DPMs
- ❖ Data warehouse specific constraints
- ❖ European XBRL Taxonomy specific constraints

- **1.01 Each Public Element MUST have a code.**

For each Public Element a technical code MUST be defined.

```
context PublicElement inv:  
    self.code->size() = 1
```

- **1.02 Each Public Element MUST have at least one label.**

At least one label for a Public Element MUST be given which provides the human readable meaning of this element.

```
context PublicElement inv:  
    self.label->size() >= 1
```

# UML Meta model for DPM

## The DPM Meta Model

- ❖ eases the understanding of DPMs for IT experts by using the standard modelling language UML,
- ❖ reduces the complexity of DPMs by showing only the relevant aspects,
- ❖ provides syntax and semantics to ease the automation of IT tasks
  - ❖ like generating data formats for the reporting process or
  - ❖ validation checks on basis of the constraints defined,
- ❖ enables the derivation of a database design (relational as well as multidimensional).



Thanks for your attention

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