

# Formal Validation of Data Point Models



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# Summary

## Summary

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# Introduction I

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The Data Point metamodel consists of:

- ✦ Sets of necessary Data Points or facts in the European Supervisory reports.
- ✦ Definitions and rules of expert users (Supervisor/Regulators).
- ✦ These reports have semantic meaning.

Used terms: Concept, Data Point Model (DPM), Dimension, Domain, Family, item, (Domain) member, Metric, Namespace, Owner, Public elements, Table Group, DateCube, module and Hypercube

# Introduction II

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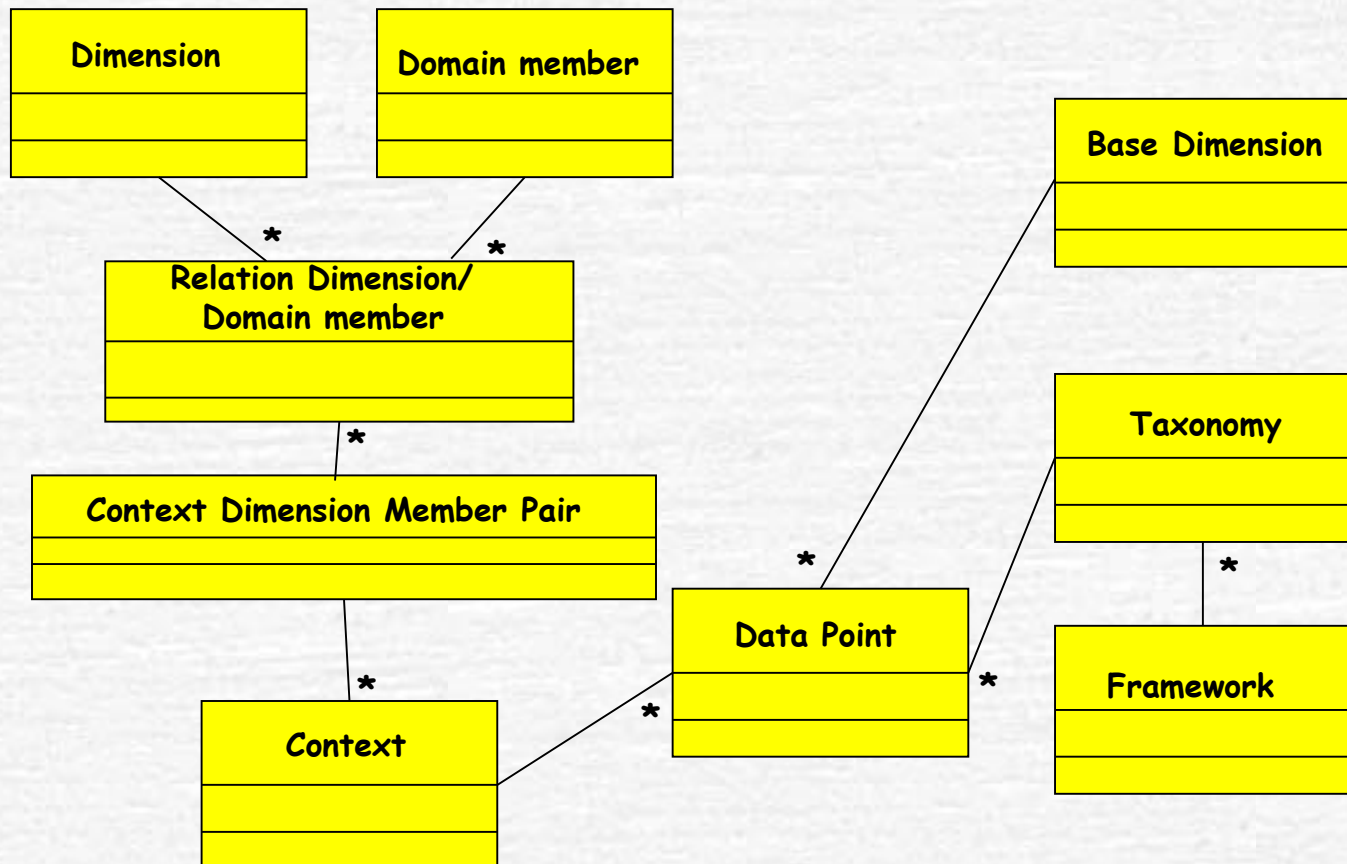
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Star model of the DPM using a ROLAP tool



# Proof of concept III

- The validation is element to element.

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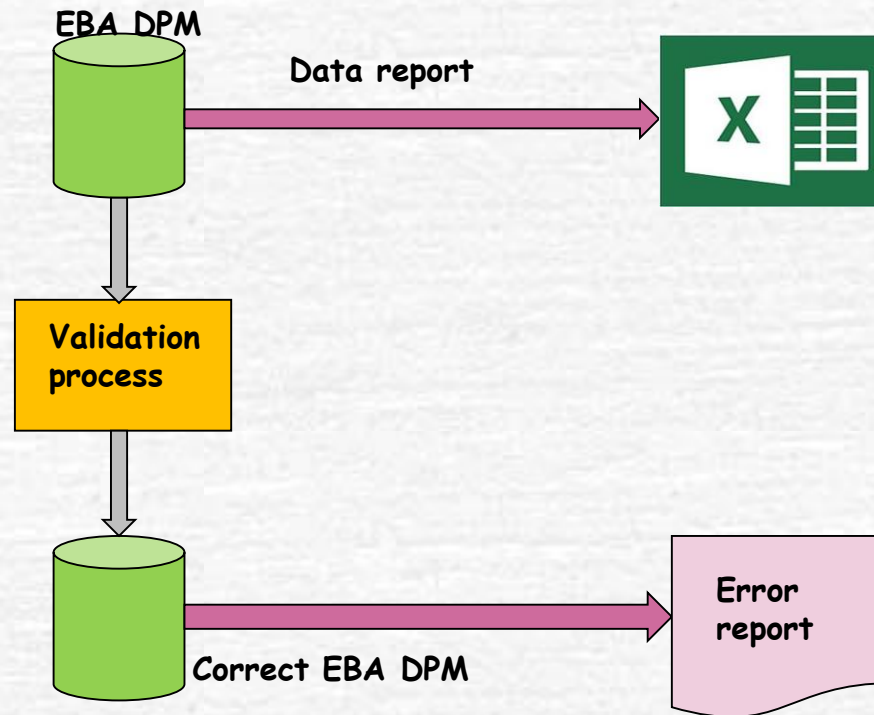
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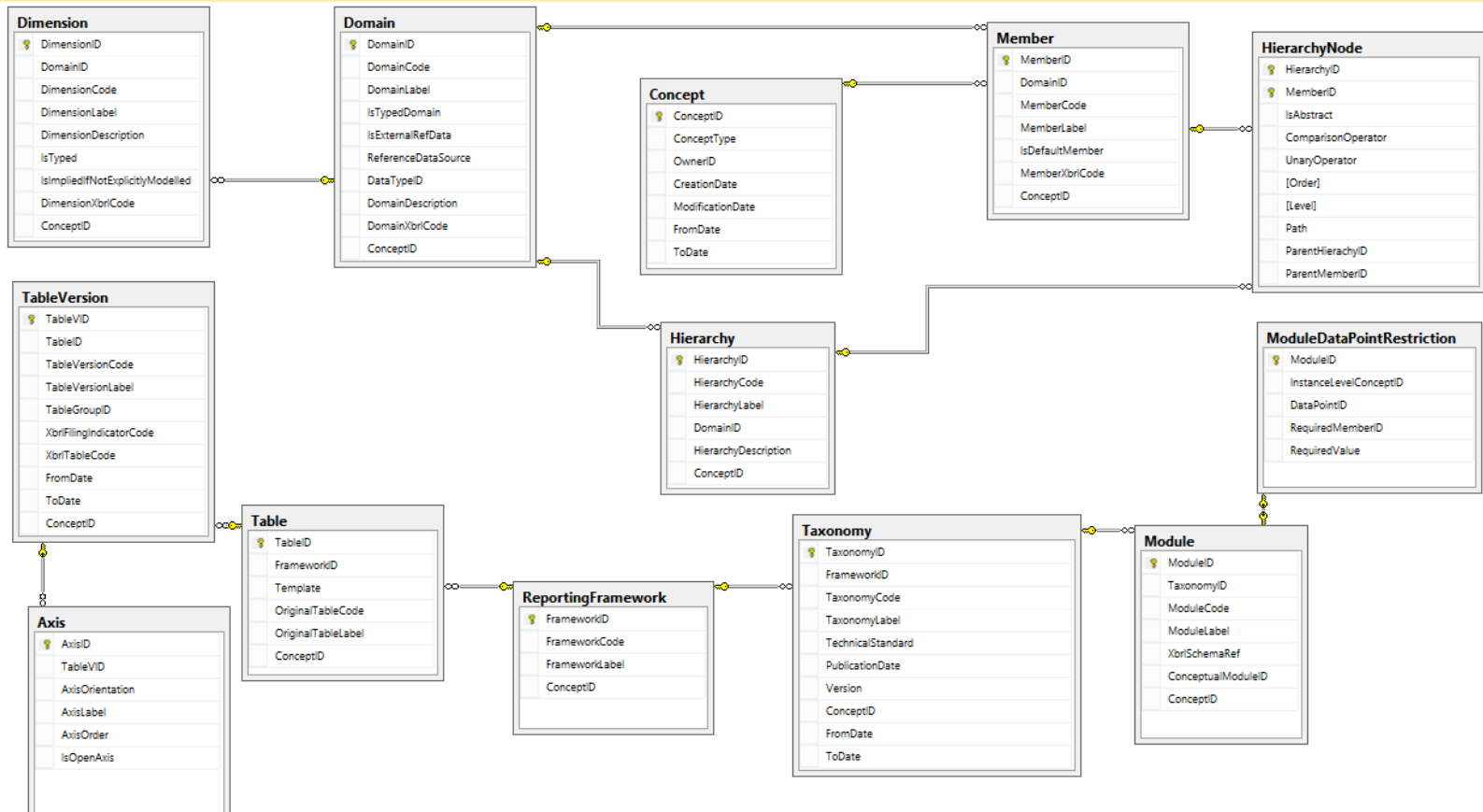
Questions



Structure of the proof.

# Set of validation tests I

W8R1O4N0W7URI.DP...Diagram\_EBA\_2.0\* x



## Structure of validation in the Relational Model.

# Set of validation tests II

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- Insert two duplicate concepts
- Insert a domain-member without inserted domain.
- Insert ID Dimension to null.



# Set of validation tests III

Domain1 = {C1, C2, C3, C4, C5, C6}

Dimension1, Dimension2  $\in$  Domain1

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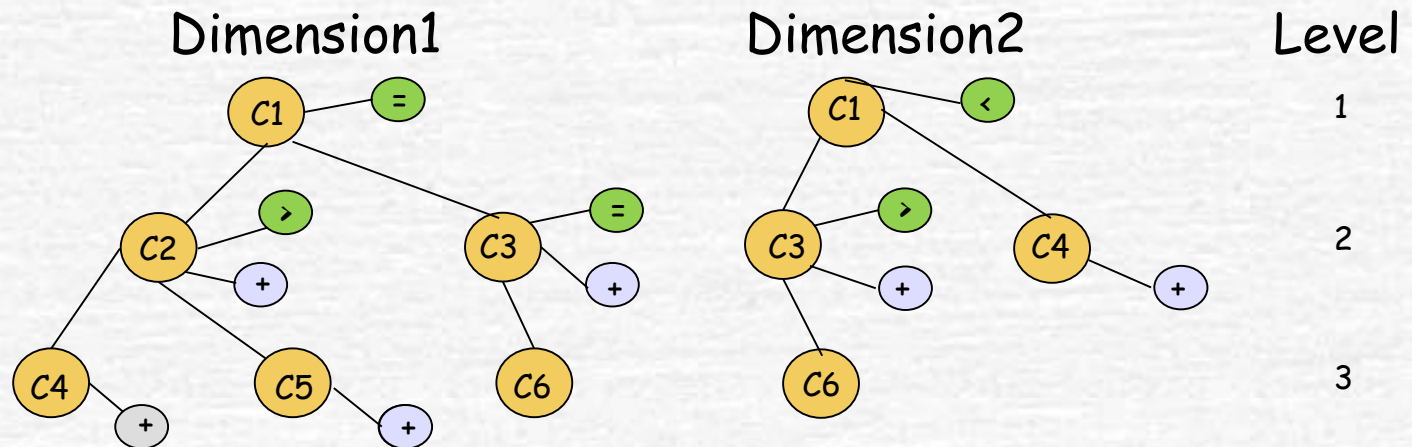
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Hierarchy1

Hierarchy2

Hierarchy  $\rightarrow$  Dimension

Hierarchy validation



# Set of validation tests IV

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- Hierarchy:
  - ❖ A son with its hierarchy has a father with the same hierarchy.

• ...



# Introduction III

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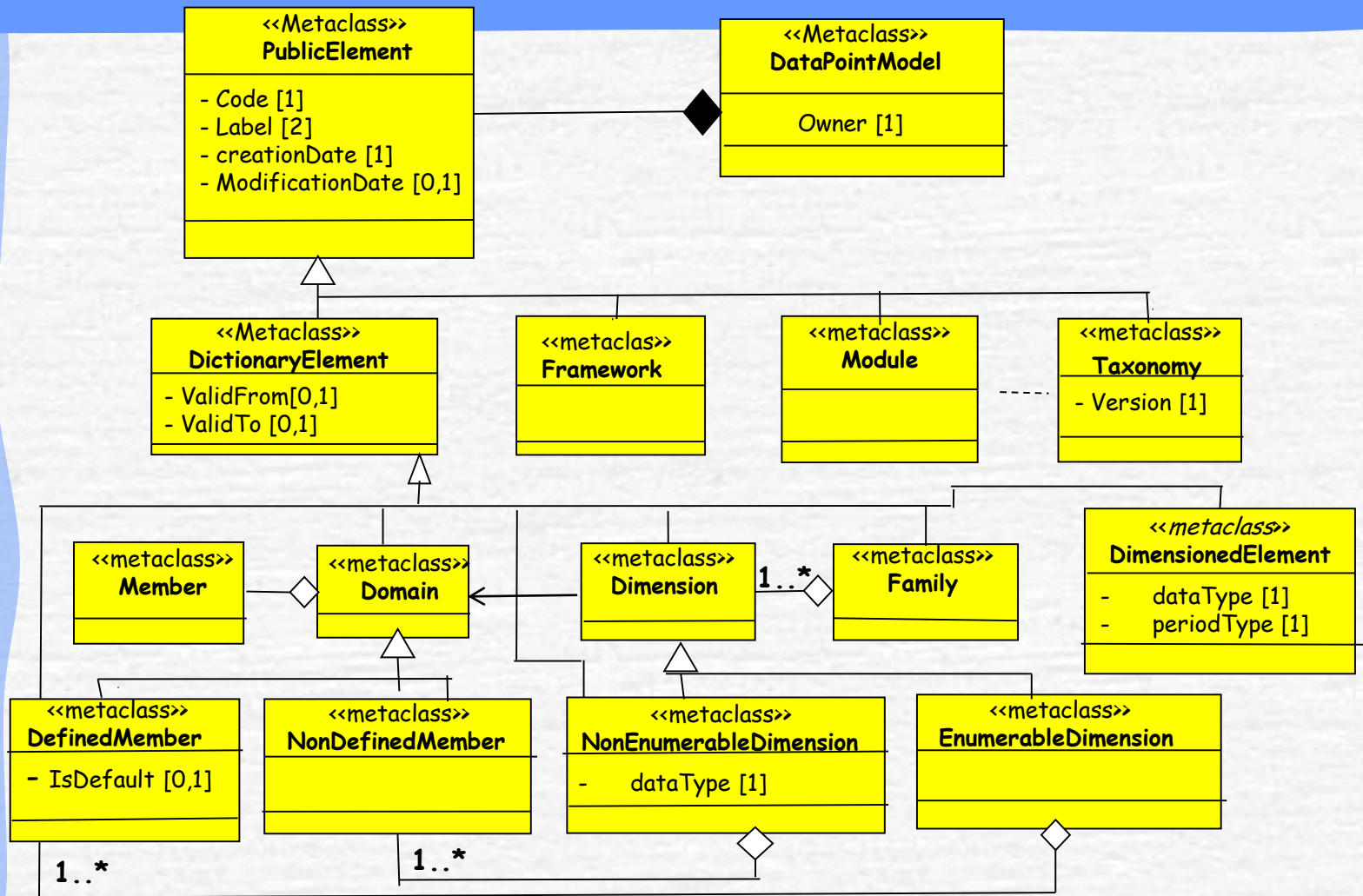
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Data Point Model: Set of artefacts in UML.

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- The main objective of this validation is to ensure the ability of the DPM to be used and to accomplish the design objectives.
- The validation of conceptual models at early phases of their development can help correct faults in the design at a point where they may still be corrected with relative ease.
- From the templates in the spreadsheets are obtained: data types, domains, concepts, primary items, dimensions, etc.
- Each element type is inserted in the structural artefacts and validated.

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The screenshot shows an Excel spreadsheet with a grid of data. The columns are labeled A through Q. The rows are numbered 1 through 27. The spreadsheet contains various financial data points and formulas. The title bar at the top reads 'Original Templates.xlsx - Excel'. The status bar at the bottom shows 'L137' and 'Cuenta Microsoft'.

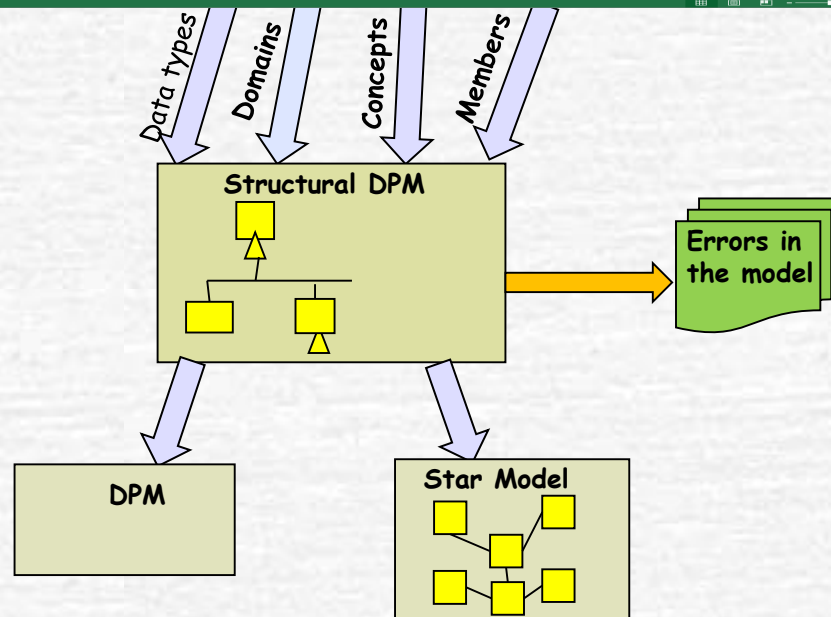


Diagram of validation



# Proof of Concept I

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- This proof uses the framework release 09/2013 (applicable as of March 2014).
- DPM data base 2.0.
- This version has been chosen, because it is not stable enough.
- From this version, in Access, the constructors are obtained.

# Proof of concept II

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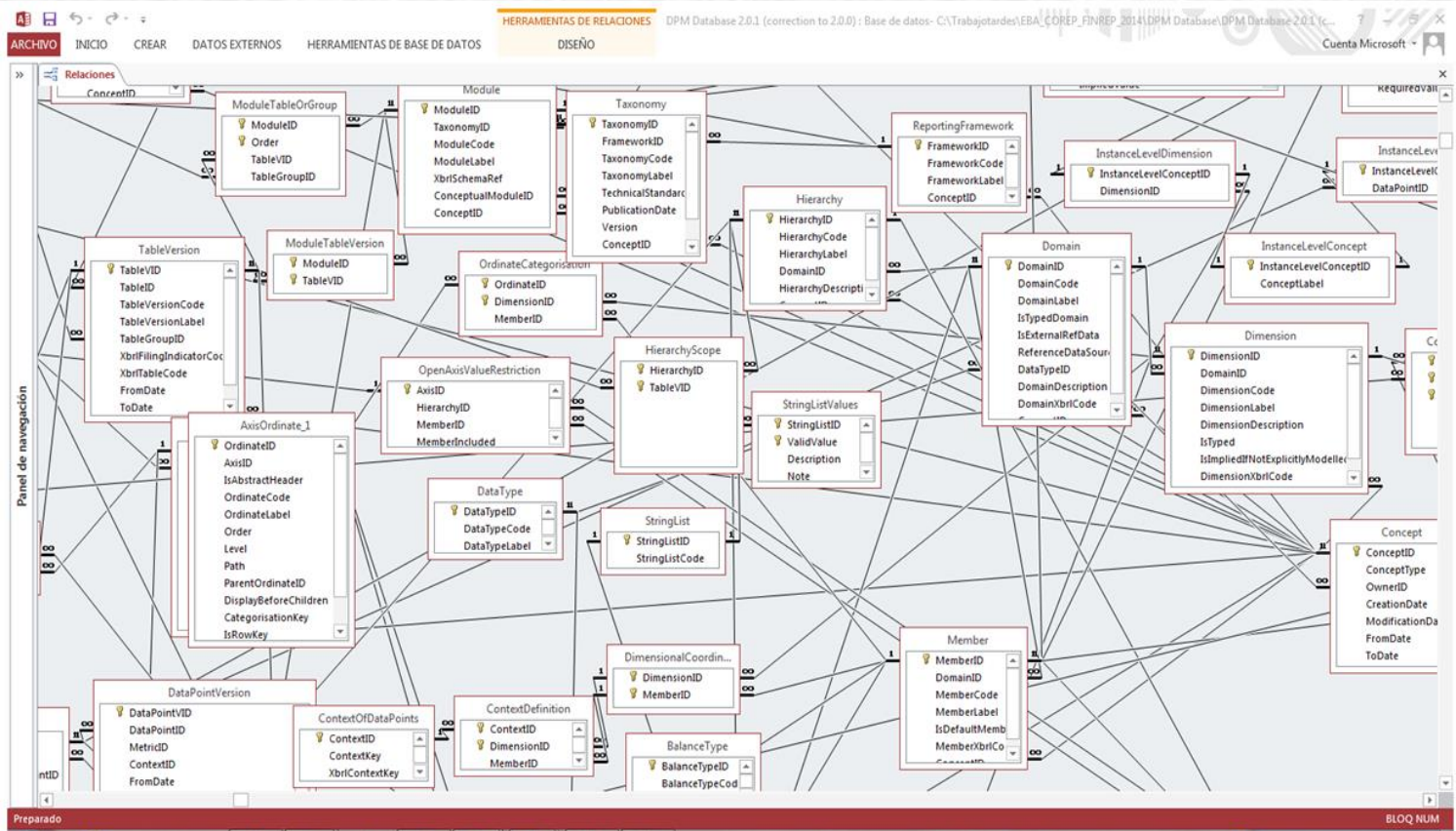
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Part of the EBA DPM

# Conclusion and future Work

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- It is necessary to validate the rest of constructors as: Tables, Tablegroup, etc.
- The target is to produce well-built metadata for semantic economic/financial reports.
- Structural validation.
- Validation with experts users in order that the validation can be semantically complete.



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- Gogolla M., Büttner F. and Richters M., 2007. USE: A UML-Based Specification Environment for validation UML an OCL. Science of Computer Programming 69:27-34.



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