

XBRL basics and taxonomies

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- **eXtensible Business Report markup Language**
- **Designed to describe the business reports**
 - **Balance sheets / Income statements**
 - **Annual reports**
 - **Prudential reports**
 - **Anti-laundering supervisory reports**
 - **...**
- **Also possible for non-financial reports**
 - **Statistics (Eurostat project- Statistical Data and Metadata eXchange- SDMX)**
 - **Medical Analyses (Health Level 7 – HL7)**
 - **Performance measures**
 - **...**

- From April to September 1998
 - Charles HOFFMAN a Certified Public Accountant (CPA) from Tacoma, Washington evaluated XML accuracy for financial filing.
- September 1998
 - Charles HOFFMAN presented his results to High Tech Task Force of American Institute of Certified Public Accountants (AICPA).
- July 1999
 - AICPA began to work on e**X**tensible **F**inancial **R**eporting **M**arkup Language (XFRML)
- August 1999
 - Members of AICPA workgroup: Pricewaterhouse Coopers, KPMG, Deloitte & Touche, e-Content, Ernst & Young, Free EDGAR, Great Plains, Microsoft...
- October 1999
 - XFRML became XBRL

- July 2000 – XBRL 1.0
- December 2001 – XBRL 2.0
- November 2002 – XBRL 2.0a
- December 2003 – XBRL 2.1
- September 2006 – XBRL Dimensions
- June 2009 – XBRL Formula
- April 2010 – Inline XBRL (XBRL elements in HTML)
- July 2010 – Versioning, base candidate recommendation
- XBRL Rendering (development), including table linkbase candidate recommendation

↑
Incompatibility
↓

↑
Compatibility
↓

- XBRL stands for **eXtensible Business Reporting Language**, language dialect of the XML (Extensible Markup Language); language for transmitting information via the Internet
- XBRL is an '**Open Standard**' for the electronic reporting of information (reports / data)
- The data-elements are defined in a '**Taxonomy**', a dictionary-like classifications in XBRL for **describing** the data in financial statements and business documents, their labels, hierarchies, aggregations, break-downs, regulatory references, validation checks....
- A XBRL '**Instance document**' contains' the **data elements tagged** with the **concepts / labels of taxonomies**. The instance documents are the files that are transmitted.

- An XBRL Instance document contains
 - o a list of facts with fact value
 - o the contextual information and unit information
 - o the reference to its taxonomies
- An XBRL Taxonomy
 - o defines the concepts and the links between the concepts
 - o defines concepts' structure, their labels, references etc
 - o generally designed by a sector consortium or a regulator
 - o can be designed, extended, or modified by an organization
- Like XML, XBRL is a meta-language
- XBRL instances and taxonomies documents are XML documents
 - o They are composed of a set of XML documents

XBRL, Taxonomies and instances (from undertakings)

eiopa

EIOPA,
development
of base taxonomies,



Taxonomy



Taxonomy



Complement?

Adaptation?

Report
Report



Undertaking
Production
of reports



Supervisor (NSA)
Validation/Storage/
Processing/Analysis of Reports

An XBRL report (instance)

```

<xbml xmlns:ci="http://www.mapetiteentreprise.fr" ...>
  <context id="C-MPE-2005">
    <entity scheme="http://www.insee.fr/siren">1345678901234</entity>
    <period> <instant>2005-12-31</instant> </period>
  </context>

  <unit id="U-EUR" xmlns:iso4217="http://www.xbrl.org/2003/iso4217">EUR</unit>

  <ci:Enterprise>
    <ci:EnterpriseName contextRef="C-MPE-2005">Ma Petite Entreprise</ci:EnterpriseName >
    <ci:EnterpriseLocation contextRef="C-MPE-2005">Paris</ci:EnterpriseLocation >
  </ci:Enterprise>
  <ci:TotalAssets contextRef="C-MPE-2005" unitRef="U-EUR" decimals="-3">500000</ci:TotalAssets>
  <ci:CurrentAssets contextRef="C-MPE-2005" unitRef="U-EUR" decimals="-3">300000</ci:CurrentAssets>
  <ci:NonCurrentAssets contextRef="C-MPE-2005" unitRef="U-EUR" decimals="-3">200000</ci:NonCurrentAssets>
  <ci:TotalLiabilitiesAndEquity contextRef="C-MPE-2005" unitRef="U-EUR" decimals="-3">500000</ci:TotalLiabilitiesAndEquity>
  <ci:TotalLiabilities contextRef="C-MPE-2005" unitRef="U-EUR" decimals="-3">230000</ci:TotalLiabilities>
  <ci:TotalEquity contextRef="C-MPE-2005" unitRef="U-EUR" decimals="-3">270000</ci:TotalEquity>
</xbml>

```

Context(s)'
definition

Unit(s)' definition

Facts

Ma Petite Entreprise – Paris – Bilan 2005

Actif	500 000€
Actifs circulants	300 000€
Actifs immobilisés	200 000€
Passif	500 000€
Dettes	230 000€
Capitaux propres	270 000€

Examples of contexts

Related to an instant

```
<context id="C-MPE-Fin-2005">
  <entity>
    <identifier scheme="http://www.insee.fr/siren">30185303200011</identifier>
  </entity>
  <period>
    <instant>2010-12-31</instant>
  </period>
</context>
```

Related to a duration

```
<context id="C-MPE-2005">
  <entity>
    <identifier scheme="http://www.insee.fr/siren">30185303200011</identifier>
  </entity>
  <period>
    <duration>
      <startDate>2010-01-01</startDate>
      <endDate>2010-12-31</endDate>
    </duration>
  </period>
</context>
```

Forever

```
<context id="C-MPE-For_ever">
  <entity>
    <identifier scheme="http://www.insee.fr/siren">30185303200011</identifier>
  </entity>
  <period>
    <forever />
  </period>
</context>
```

Containing an entity subdivision (segment)

```
<context id="C-MPE-Fin-2005">
  <entity>
    <identifier scheme="http://www.insee.fr/siren">30185303200011</identifier>
    <segment>
      <ci:site>Cairo</ci:site>
      <ci:division>Sales</ci:division>
    </segment>
  </entity>
  <period>
    <instant>2010-12-31</instant>
  </period>
</context>
```

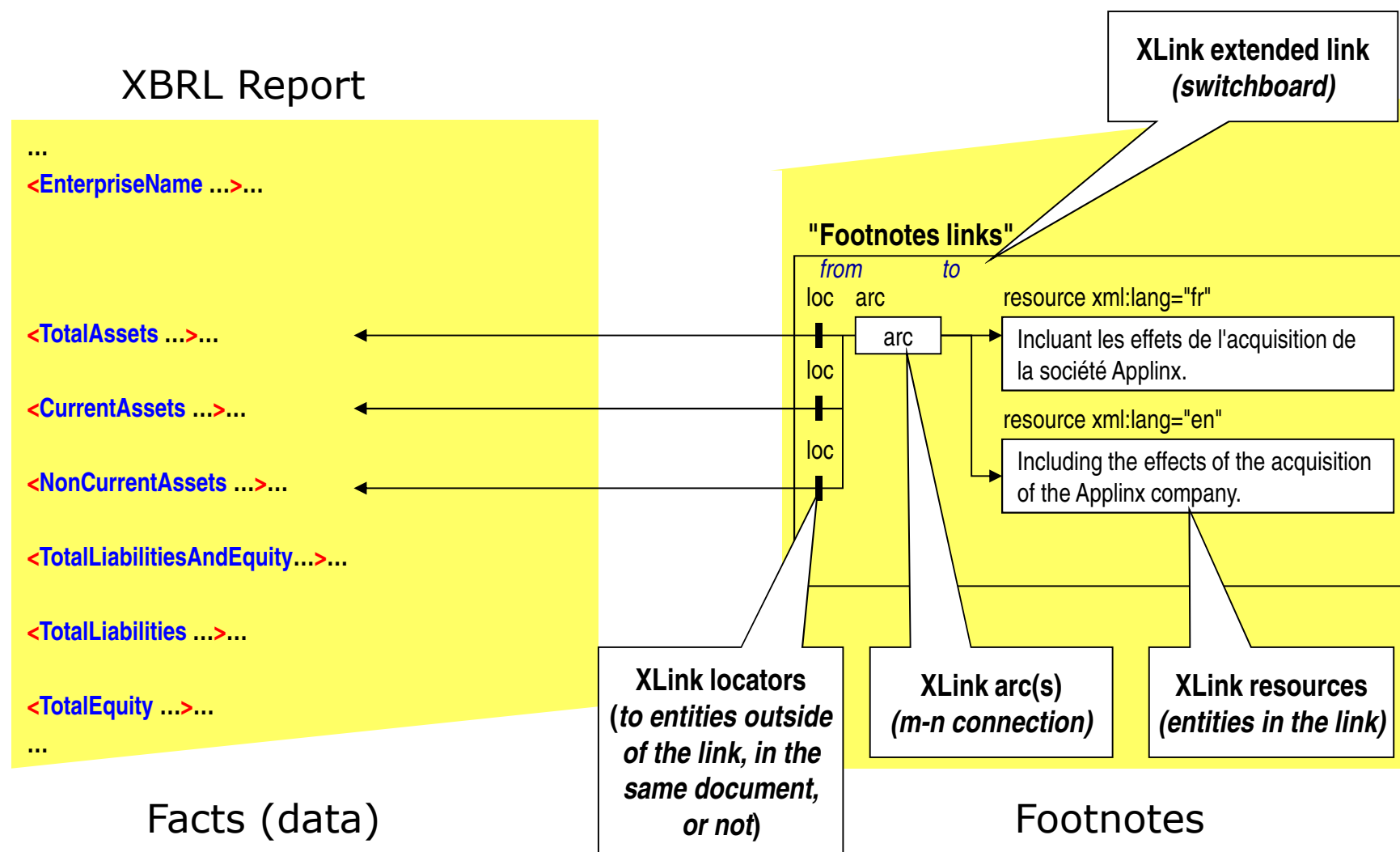
Containing a scenario

```
<context id="C-MPE-2005">
  <entity>
    <identifier scheme="http://www.insee.fr/siren">30185303200011</identifier>
  </entity>
  <period>
    <startDate>2010-01-01</startDate>
    <endDate>2010-12-31</endDate>
  </period>
  <scenario>
    <ci:country>Spain</ci:country>
    <ci:sector>Retail</ci:sector>
    <ci:customerSizeClass>3</ci:customerSizeClass>
  </scenario>
</context>
```

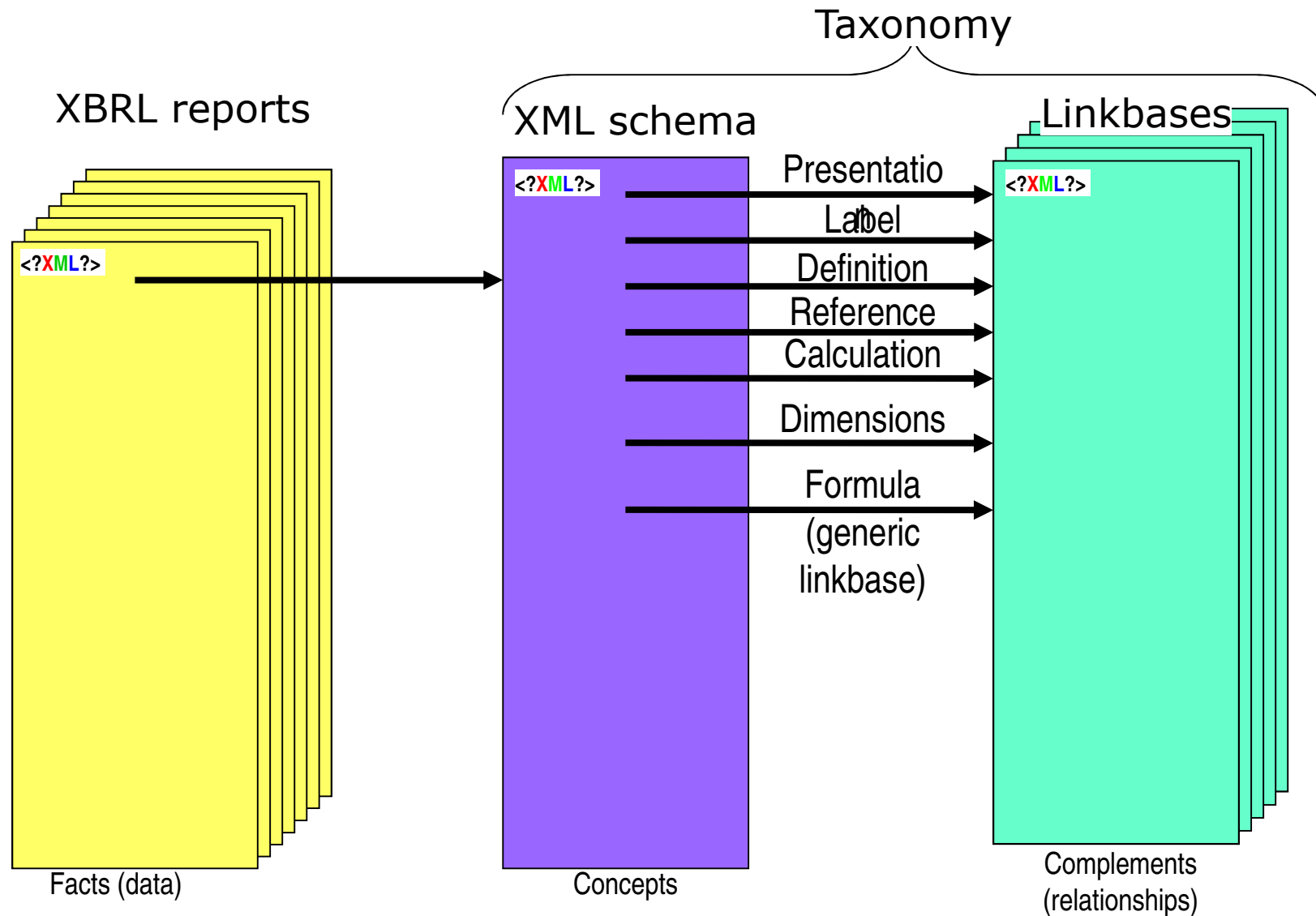
Examples of units

```
<unit id="U-Pure">
  <measure>xbri:pure</measure>
</unit>
<unit id="U-Shares">
  <measure>xbri:shares</measure>
</unit>
<unit id="U-Euro">
  <measure xmlns:iso4217="http://www.xbrl.org/2003/iso4217">
    iso4217:EGP
  </measure>
</unit>
<unit id="U-SquareMeters" xmlns:SI="http://www.bipm.org/en/si">
  <measure>SI:meters</measure>
  <measure>SI:meters</measure>
</unit>
```

```
<unit id="U-EarningPerShare">
  <divide>
    <unitNumerator>
      <measure>iso4217:EGP</measure>
    </unitNumerator>
    <unitDenominator>
      <measure>xbri:shares</measure>
    </unitDenominator>
  </divide>
```



XBRL taxonomy?



XBRL reports

```

...
<link:schemaRef
  xlink:href="myTaxonomy.xsd"
  xlink:type="simple">

<EnterpriseName ...>...

<TotalAssets ...>...

<CurrentAssets ...>...
<NonCurrentAssets ...>...
<TotalLiabilitiesAndEquity...>...
<TotalLiabilities ...>...
<TotalEquity ...>...
...
    
```

Facts (data)

XML schema

```

<schema ...

<element name="EnterpriseName"
  type="xbrli:stringItemType"
  substitutionGroup="xbrli:item"
  xbrli:periodType="instant"/>

<element name="TotalAssets"
  id="ci-TotalAssets"
  type="xbrli:monetaryItemType"
  substitutionGroup="xbrli:item"
  xbrli:periodType="instant"
  xbrli:balance="debit"/>

<element name="CurrentAssets" ...
<element name="NonCurrenttotalAssets" ...
<element name="TotalLiabilitiesAndEquity" ...
<element name="TotalLiabilities" ...
<element name="TotalEquity" ...
...
    
```

Concepts

Extension:
periodType="instant"
ou "duration"

**Extension for
currency items:**
balance="credit" ou
"debit"

Best practice:
XML schemas are
flat (structures and
relationships are
expressed in
XLink linkbases)

XBRL report

```
...
<EnterpriseName ...>...

<TotalAssets ...>...

<CurrentAssets ...>...

<NonCurrentAssets ...>...

<TotalLiabilitiesAndEquity ...>...

<TotalLiabilities ...>...

<TotalEquity ...>...
...
```

Facts (data)

XML schema

```
id="ci-EnterpriseName" ...

id="ci-TotalAssets" ...

id="ci-CurrentAssets" ...

id="ci-NonCurrenttotalAssets" ...

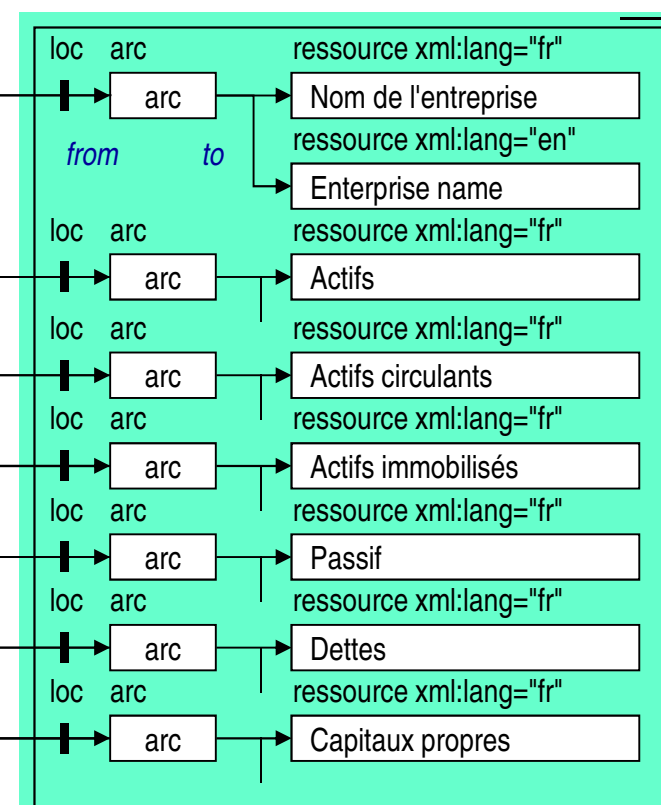
id="ci-TotalLiabilitiesAndEquity" ...

id="ci-TotalLiabilities" ...

id="ci-TotalEquity" ...
...
```

Concepts

Label linkbase



Labels

- A role may be defined at three levels
 - o at the link level (switchboard) – Extended Link Role (or ELR)
 - o at the arc level - arcRole
 - o at the resource level – resource role
- Some roles are defined in the XBRL specifications (noted XBRL), but a taxonomy may define its own roles
- For the label arcs, XBRL defines a single arc role: concept-label
- XBRL defines the following roles for the label resources:
 - o label (default value)
 - o terseLabel
 - o verboseLabel
 - o positiveLabel
 - o positiveTerseLabel
 - o positiveVerboseLabel
 - o negativeLabel
 - o negativeTerseLabel
 - o negativeVerboseLabel
 - o zeroLabel
 - o zeroTerseLabel
 - o zeroVerboseLabel
 - o totalLabel
 - o periodStartLabel
 - o periodEndLabel
 - o documentation
 - o definitionGuidance
 - o disclosureGuidance
 - o presentationGuidance
 - o measurementGuidance
 - o commentaryGuidance
 - o exampleGuidance

XBRL Presentation

Ma Petite Entreprise	
Actif	500 000€
Actifs circulants	300 000€
Actifs immobilisés	300 000€
Passif	500 000€
Dettes	230 000€
Capitaux propres	270 000€

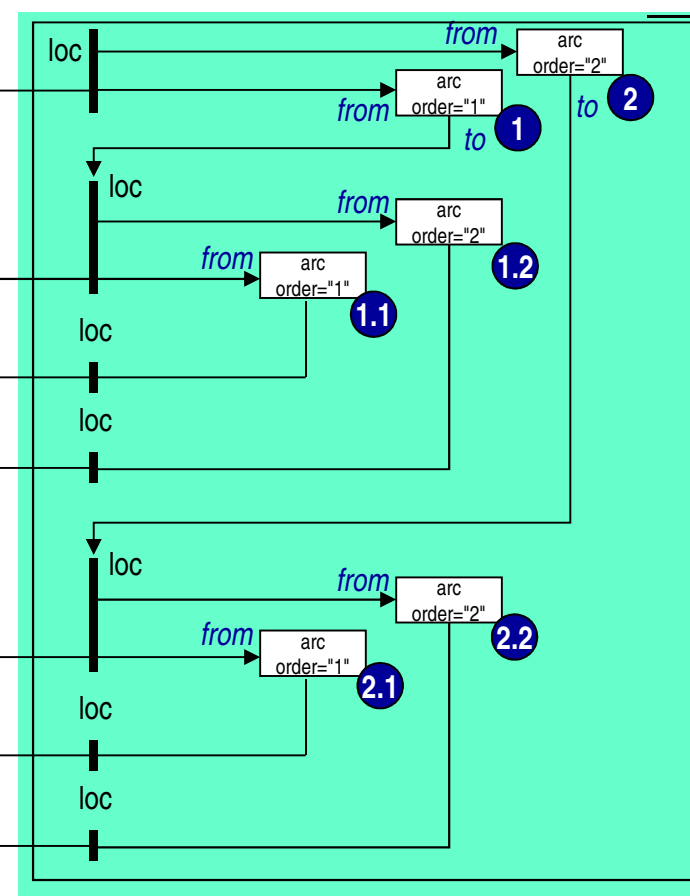
XML schema

`id="ci-EnterpriseName" ...`
`id="ci-TotalAssets" ...`
`id="ci-CurrentAssets" ...`
`id="ci-NonCurrenttotalAssets" ...`

`id="ci-TotalLiabilitiesAndEquity" ...`
`id="ci-TotalLiabilities" ...`
`id="ci-TotalEquity" ...`
`...`

Concepts

Presentation linkbase



Presentation hierarchy

XBRL report

```
...
<EnterpriseName ...>...

<TotalAssets ...>...

<CurrentAssets ...>...

<NonCurrentAssets ...>...

<TotalLiabilitiesAndEquity ...>...

<TotalLiabilities ...>...

<TotalEquity ...>...
...
```

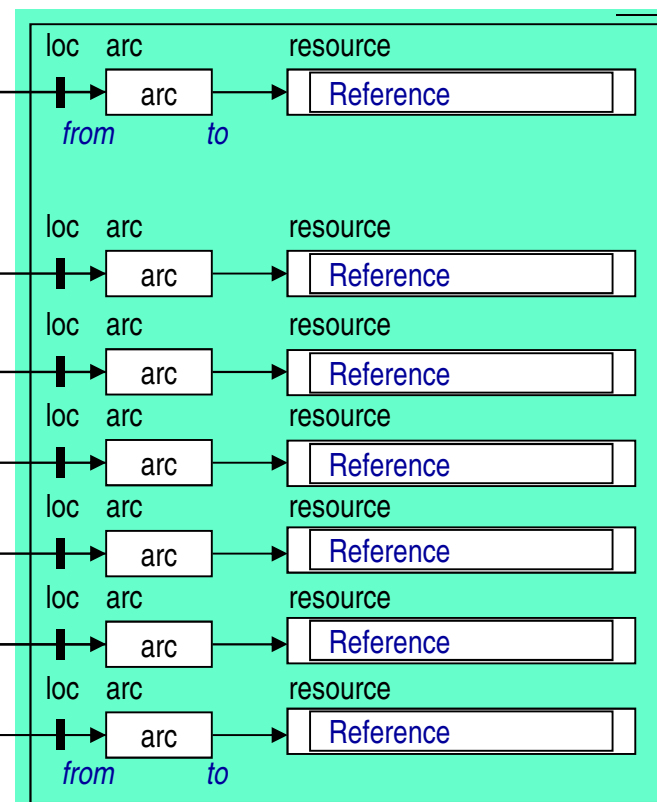
Facts (data)

XML schema

```
id="ci-EnterpriseName" ...
id="ci-TotalAssets" ...
id="ci-CurrentAssets" ...
id="ci-NonCurrenttotalAssets" ...
id="ci-TotalLiabilitiesAndEquity" ...
id="ci-TotalLiabilities" ...
id="ci-TotalEquity" ...
...
```

Concepts

Reference linkbase



References

Roles for the reference linkbase

- For the reference resources, XBRL defines the roles :
 - o reference (default value)
 - o definitionRef
 - o disclosureRef
 - o mandatoryDisclosureRef
 - o recommendedDisclosureRef
 - o unspecifiedDisclosureRef
 - o presentationRef
 - o measurementRef
 - o commentaryRef
 - o exampleRef
- XBRL defines a single arc role: concept-reference

XBRL calculation

Ma Petite Entreprise		
Actif		500 000€
1.1	Actifs circulants	300 000€
1.2	Actifs immobilisés	300 000€
Passif		500 000€
2.1	Dettes	230 000€
2.2	Capitaux propres	270 000€

XML schema

id="ci-EnterpriseName" ...

id="ci-TotalAssets" ...

id="ci-CurrentAssets" ...

id="ci-NonCurrenttotalAssets" ...

id="ci-TotalLiabilitiesAndEquity" ...

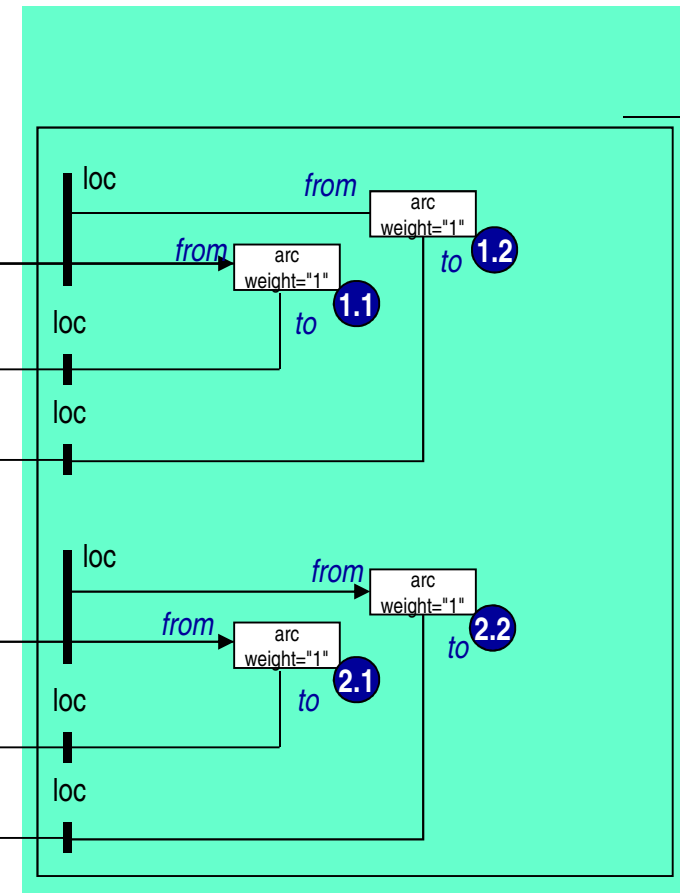
id="ci-TotalLiabilities" ...

id="ci-TotalEquity" ...

...

Concepts

Calculation linkbase

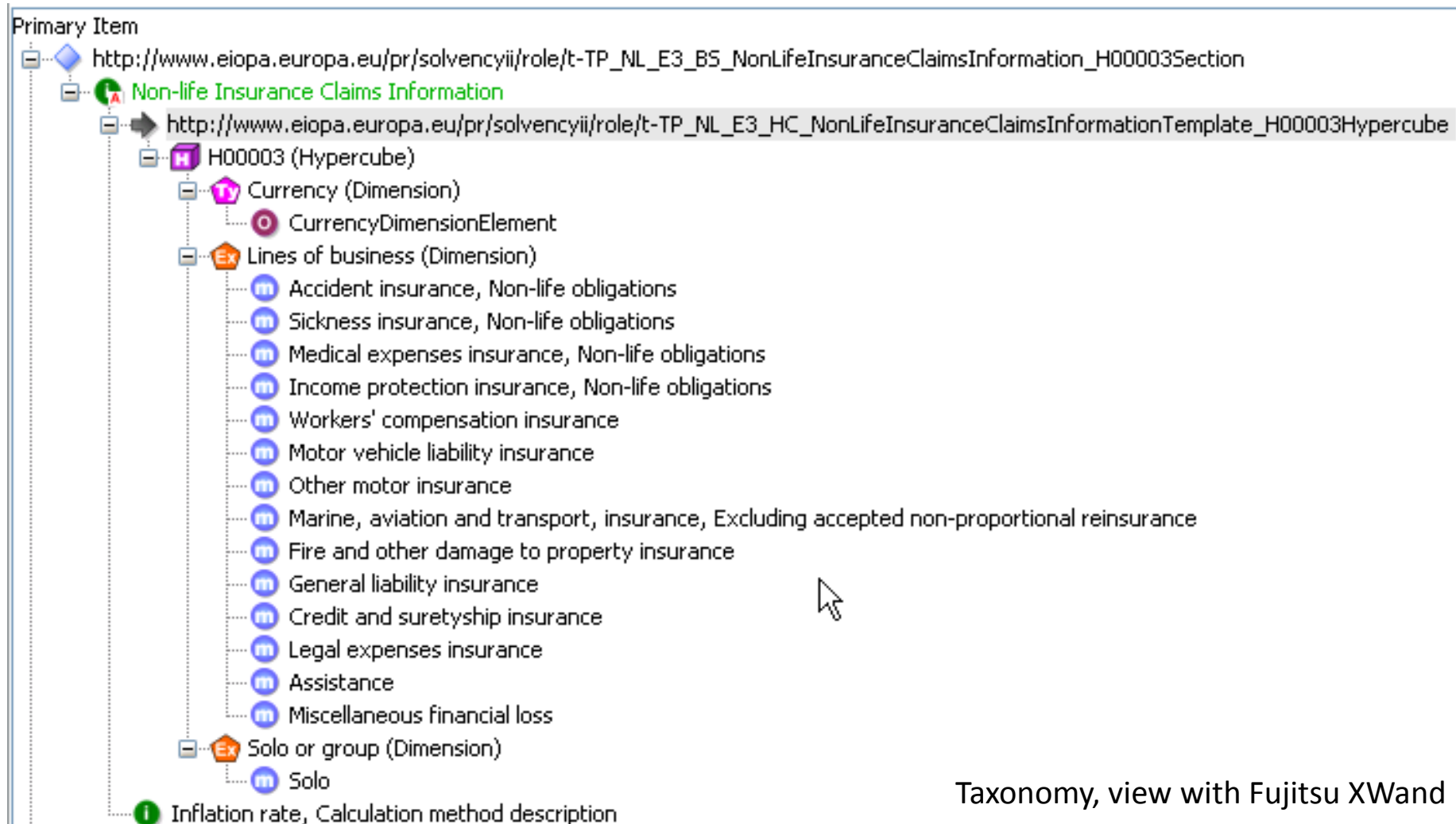


Calculations (aggregation checks)

- CEBS (Committee of European banking Supervisors) has decided to propose XBRL for the banking supervisory reporting Two families of taxonomies:
 - o COREP : COMmon REPorting, prudential banking reporting (Basel II – CRD : Capital Requirements Directive)
 - o FINREP : FINancial REPorting, financial banking reporting (IFRS)
- Need for COREP to classify, disaggregate, break-down... facts along some aspects (risk, type of support, type of exposition...) →
 - o XBRL dimensions, extension of XBRL 2.1, has been developed, with the help of the CEBS COREP workgroup, and ratified by XBRL International on September 2006
- Need to specify the potential values of dimensions associated to a fact => notion of hypercube (similar to pivot tables in spreadsheets)
- A dimension may be associated to a set of defined values - *explicit* (example: country, division) or defined by a type – *typed* (example: asset identification, credit rate...)

- Example of possible dimensions a sales amount:
 - o by country and area (of sales)
 - o by type of product
 - o by customer
 - o by customer sector,
 - o by country and area (of production)
 - o ...
- In XBRL 2.1, the notion of scenario and segment allows to handle this problem, XBRL Dimensions describes a way to do it
- Several dimensions may share the same value space
- The domain defines a value space
 - o The dimension determines the semantics
 - o A dimension may include several domains
 - o It is possible to forbid some invalid combinations (e.g.: a given product is not sold in a given country)
- The values of the dimensions associated to a fact are stored in the referenced context (segment or scenario sub-element)

Exemple of dimensional characteristics



Taxonomy, view with Fujitsu XWand

Extract from Solvency II sample taxonomy published for consultation in July 2011

Dimensional fact, context and unit elements



```
<xbrli:context id="I_CurrencyVal_HistoricInflationYearN_AccidentInsuranceNonLifeObligations_Solo">
  <xbrli:entity>
    <xbrli:identifier scheme="http://www.eiopa.europa.eu/pr/solvencyii/undertaking">00000</xbrli:identifier>
  </xbrli:entity>
  <xbrli:period>
    <xbrli:instant>2011-06-30</xbrli:instant>
  </xbrli:period>
  <xbrli:scenario>
    <xbrldi:typedMember dimension="d-cur:CurrencyDimension"><d-sty:CurrencyDimensionElement>EUR</d-sty:CurrencyDimensionElement></xbrldi:typedMember>
    <xbrldi:explicitMember dimension="d-hiy:HistoricalInflationYearsDimension">d-hiy:YearN</xbrldi:explicitMember>
    <xbrldi:explicitMember dimension="d-slb:LinesOfBusinessDimension">d-slb:AccidentInsuranceNonLifeObligations</xbrldi:explicitMember>
    <xbrldi:explicitMember dimension="d-soc:SoloOrGroupDimension">d-soc:Solo</xbrldi:explicitMember>
  </xbrli:scenario>
</xbrli:context>

<xbrli:unit id="U-PURE"><xbrli:measure>xbrli:pure</xbrli:measure></xbrli:unit>

<p-TP_NL_E3:XX1 contextRef="I_CurrencyVal_HistoricInflationYearN_AccidentInsuranceNonLifeObligations_Solo" unitRef="U-PURE" decimals="INF">0.1</p-TP_NL_E3:XX1>
```

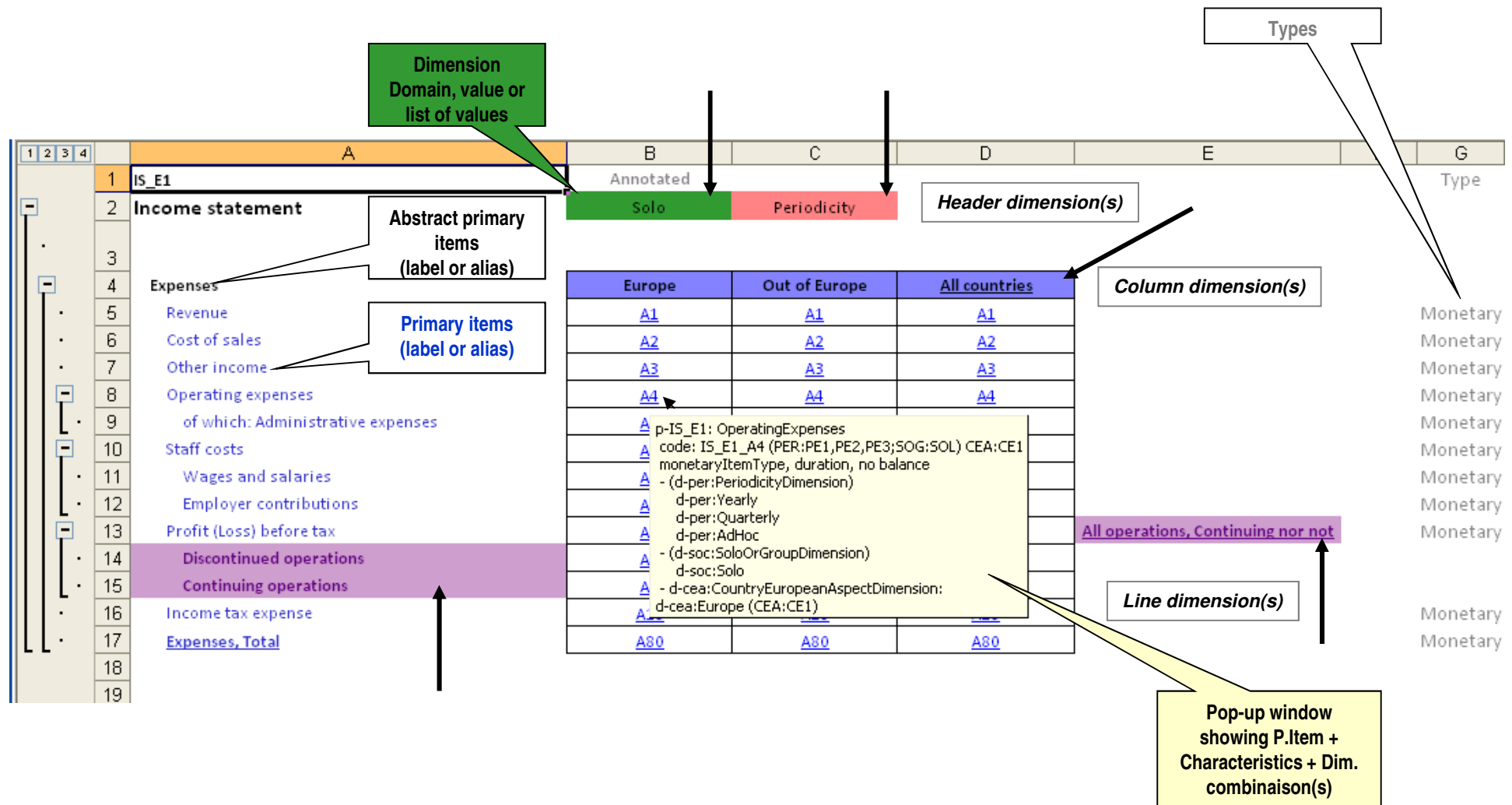
Thank you

Any questions?

Extra slides, just in case

Taxonomy generated from templates

eioπα



A real template (extract)

eiopa

1	2	3	4	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	TP_NL_E3				Annotated															
2	Non-life Insurance Claims Information				(including allocated claims management expenses)															
3					Solo	Currency														
4					Non-life obligations															
5																				
6	Claims information																			
7	Gross Claims Paid				Development years															
8	Run-off years				Year n+1	Year n+2	Year n+3	Year n+4	Year n+5	Year n+6	Year n+7	Year n+8	Year n+9	Year n+10						
9	Prior years																			
10	Year n-9				A1	B1	C1	D1	E1	F1	G1	H1	I1	J1					Y	Monetary
11	Year n-8				A2	B2	C2	D2	E2	F2	G2	H2	I2						Y	Monetary
12	Year n-7				A3	B3	C3	D3	E3	F3	G3	H3							Y	Monetary
13	Year n-6				A4	B4	C4	D4	E4	F4	G4								Y	Monetary
14	Year n-5				A5	B5	C5	D5	E5	F5									Y	Monetary
15	Year n-4				A6	B6	C6	D6	E6										Y	Monetary
16	Year n-3				A7	B7	C7	D7											Y	Monetary
17	Year n-2				A8	B8	C8												Y	Monetary
18	Year n-1				A9	B9													Y	Monetary
19	Year n				A10														Y	Monetary
20					p-TP_NL_E3_T: GrossClaimsPaidClaimsInformationNonLifeInsuranceClaimsInformationIncludingAllocatedClaimsManagementExpenses															
21	Gross Claims Provision				code: TP_NL_E3_T_30 (CUR:CUR;LOB:LB1;SOC:SOL) DVY:DVY1;ROF:RO1															
22	Run-off years				monetaryItemType, instant, no balance															
23	Prior years				(d-cur:CurrencyDimension) - typed															
24	Year n-9				(d-slb:LinesOfBusinessDimension)															
25	Year n-8				(d-slb:LinesOfBusinessForNonLifeObligationsExcludingNonSltHealth															
26	Year n-7				(d-soc:SoloOrConsolidatedDimension)															
27	Year n-6				(d-soc:Solo															
28	Year n-5				(d-dvy:DevelopmentYearDimension: d-dvy:YearN1 (DVY:DVY1)															
29	Year n-4				(d-rof:RunOffDimension: d-rof:YearN1 (ROF:RO1)															
30	Year n-3				L7	M7	N7	O7	P7										Y	Monetary
31	Year n-2				L8	M8	N8												Y	Monetary
32	Year n-1				L9	M9													Y	Monetary
33	Year n				L10														Y	Monetary
34																				
35	Gross Claims Outstanding				Development years															

- Some firms must send reports to both banking and insurance regulators
- Some software vendors sell products or solutions for banks and insurance companies
- Commonalities between EBA and EIOPA taxonomies are desirable:
 - o Common dimensions
 - o Data Point Modelling
 - o Common data types
 - o Taxonomy architecture
 - o Base primary items
 - o Label constructions
 - o Tools
 - o etc

- Codes are used as tag names for concepts
 - o To get usable names (not too long)
 - o To be language-agnostic
 - o The codes used are those that are defined by the business people in the Quantitative Reporting Templates (regulatory document)
 - o There are not Excel cell coordinates !

- Data modelling is used to determine characteristics of a data
- Data Point Modelling uses XBRL dimensions to express all characteristics (so called hidden dimensions)
- In highly dimensional taxonomies, each concept is exploded along all its dimensions (hidden or not) and the "logical concept" does not appear any more

From business concept to data point modelled concept

