



24th XBRL International Conference

“Transparency: with Available, Reliable, Comparable and Re-usable Data”

March 20-22, 2012
Abu Dhabi, UAE

Taxonomy Summit
Methodology for architecting ELOPA taxonomies
Eric JARRY – March 22, 2012

What is EIOPA?

- ▶ European System of Financial Supervision
 - European Supervisory Authorities
 - EBA: European Banking Authority
 - EIOPA: European Insurance and Occupational Pensions Authority
 - ESMA; European Securities and Markets Authority
 - National Supervisory Authorities, examples:
 - Finland: FIN-FSA (EBA, EIOPA and ESMA)
 - Spain: Banco de España (EBA), Ministry of Economy (EIOPA)
 - France: ACP – Banque de France (EBA and EIOPA)

Reporting flows

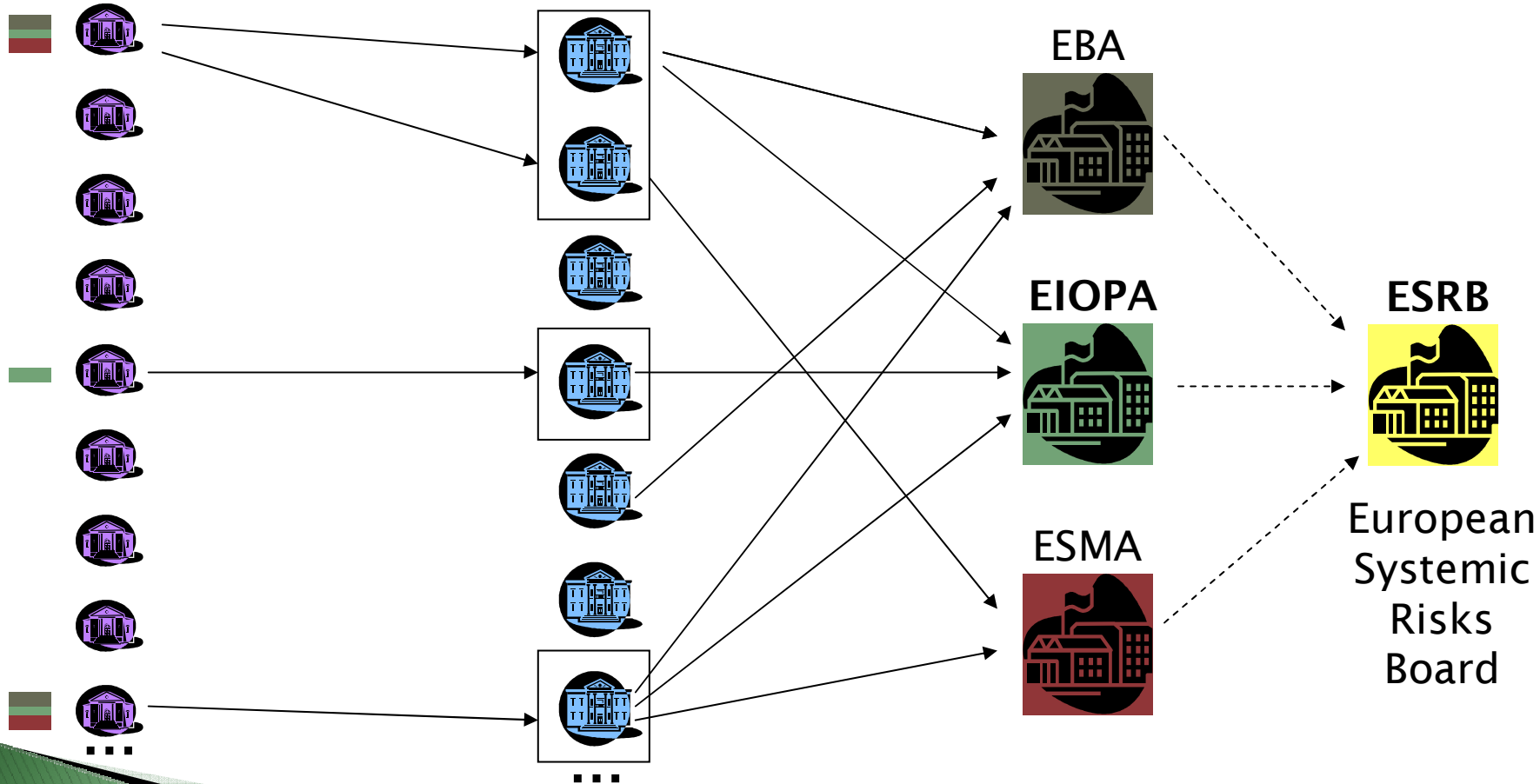
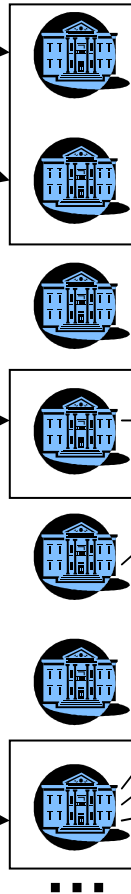
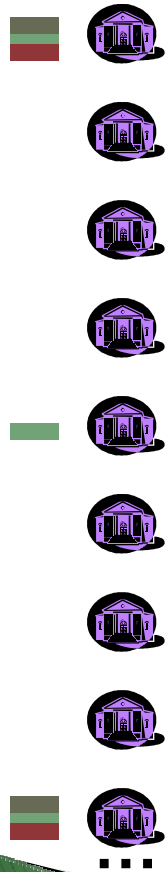
Countries

Europe

Reporters

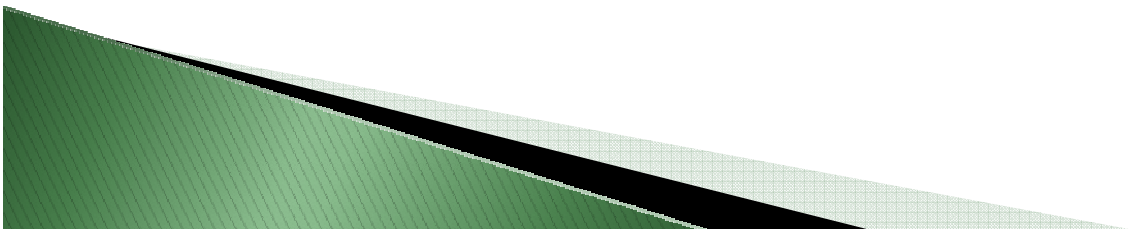
NSAs

ESAs



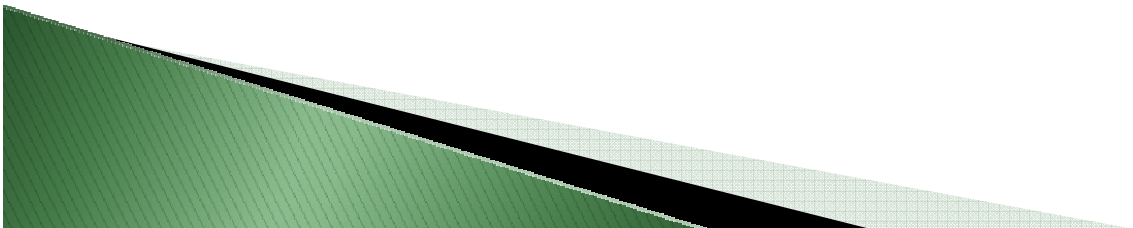
Reportings

- ▶ Solvency II directives
 - ▶ Financial stability
 - ▶ Statistics for ECB (European Central Bank)
 - ▶ ...
-
- ▶ Reportings from undertakings to NSAs
 - ▶ Reportings from NSAs to EIOPA

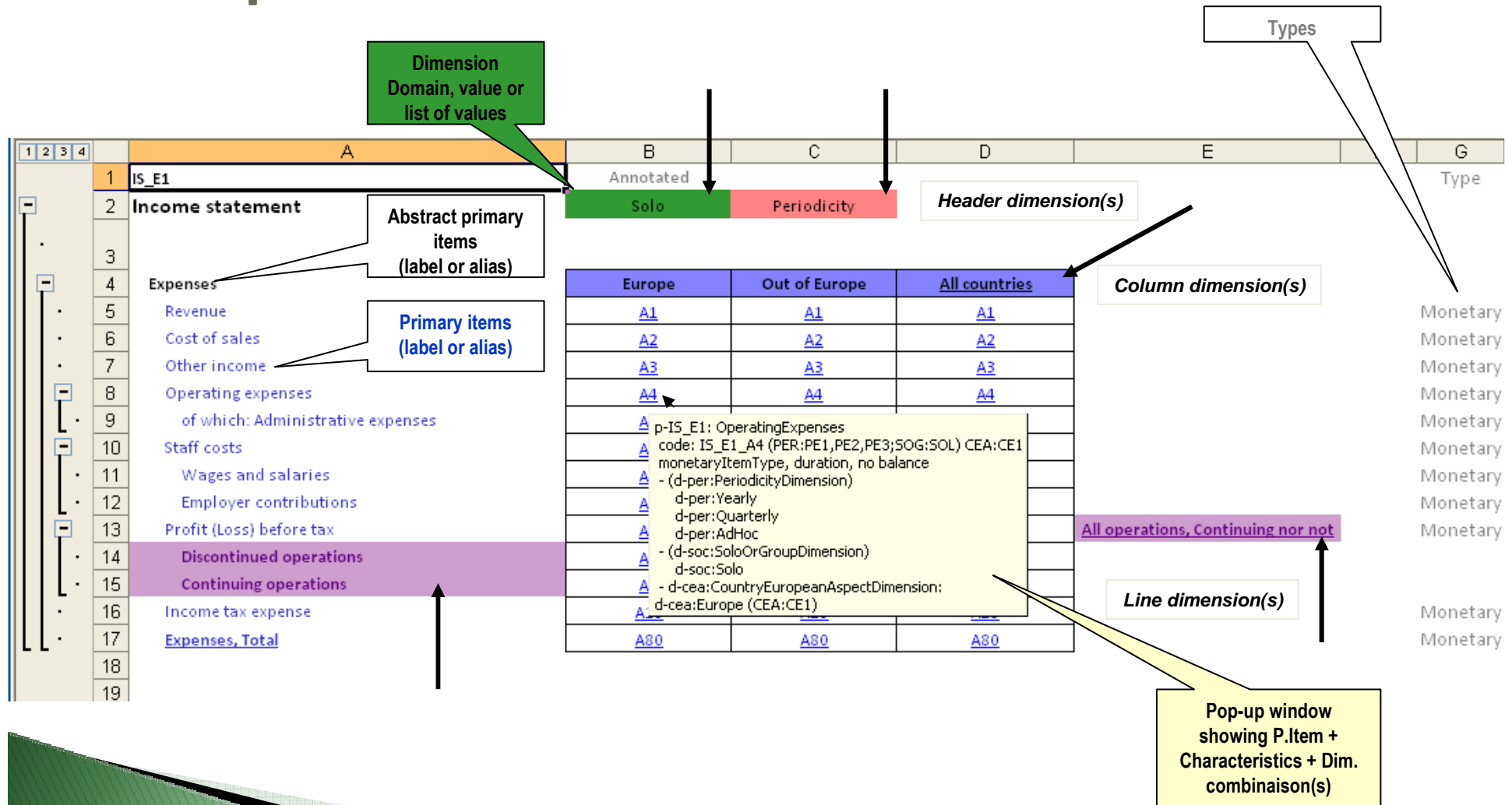


Choice of XBRL

- ▶ Complex reportings
- ▶ Structured XML, first chosen, is not adequate
- ▶ Choice of XBRL, over an EIOPA-specific flat XML language : YARL (Yet Another Reporting Language)



Taxonomy generated from templates



A real template

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				A1	B1	C1	D1	E1	F1	G1	H1	I1	J1					Y	Monetary
10	Year n-9				A2	B2	C2	D2	E2	F2	G2	H2	I2	J2					Y	Monetary
11	Year n-8				A3	B3	C3	D3	E3	F3	G3	H3							Y	Monetary
12	Year n-7				A4	B4	C4	D4	E4	F4	G4								Y	Monetary
13	Year n-6				A5	B5	C5	D5	E5	F5									Y	Monetary
14	Year n-5				A6	B6	C6	D6	E6										Y	Monetary
15	Year n-4				A7	B7	C7	D7											Y	Monetary
16	Year n-3				A8	B8	C8												Y	Monetary
17	Year n-2				A9	B9													Y	Monetary
18	Year n-1				A10														Y	Monetary
19	Year n																		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											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															

Transposition file

Characteristics and hierarchies

1	2	3	4	5	A	B	C	D	E	F	G	H	I	J
					Label	Usag	Prefix	Type	Val	Peric	Nillat	Sta	Code	L3C Name
					Income statement (Template)	abstract	IS_E1	stringItemType				A	IS_E1_a0	IncomeStatementTemplate
					Income statement	abstract	IS_E1	stringItemType				A	IS_E1_a1	IncomeStatement
					Expenses, Income statement	abstract	IS_E1	stringItemType				A	IS_E1_a2	ExpensesIncomeStatement
					Revenue	element	IS_E1	monetaryItemType		duration	true	10	IS_E1_A1	Revenue
					Cost of sales	element	IS_E1	monetaryItemType		duration	true	10	IS_E1_A2	CostOfSales
					Other income	element	IS_E1	monetaryItemType		duration	true	10	IS_E1_A3	OtherIncome
					Operating expenses	element	IS_E1	monetaryItemType		duration	true	10	IS_E1_A4	OperatingExpenses
					Administrative expenses	element	IS_E1	monetaryItemType		duration	true	10	IS_E1_A5	AdministrativeExpenses
					Staff costs	element	IS_E1	monetaryItemType		duration	true	10	IS_E1_A6	StaffCosts
					Wages and salaries	element	IS_E1	monetaryItemType		duration	true	10	IS_E1_A7	WagesAndSalaries
					Employer contributions, Staff costs	element	IS_E1	monetaryItemType		duration	true	10	IS_E1_A8	EmployerContributionsStaffCosts
					Profit (Loss) before tax	element	IS_E1	monetaryItemType		duration	true	10	IS_E1_A9	ProfitLossBeforeTax
					Income tax expense	element	IS_E1	monetaryItemType		duration	true	10	IS_E1_A13	IncomeTaxExpense
					Expenses, Total	element	IS_E1	monetaryItemType		duration	true	10	IS_E1_A80	ExpensesTotal

Transposition file

Dimensional aspect

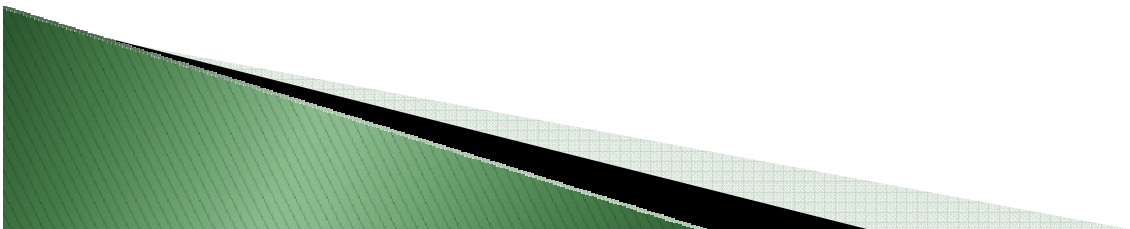
1	2	3	A	B	I	J	
	1		Label	Usage	Hypercube	Name	
-	2		Income statement (Table)	table	E1	IncomeStatement	
-	3		Income statement	abstract	E1	IncomeStatement	
•	4		CEA:CE1,CE2,CE_;PER:PE1,PE2,PE3;SOG:SOL	inclusion	H00003	H00003Hypercube	
•	5		Revenue	element	E1	IS_E1_A1	Revenue
•	6		Cost of sales	element	E1	IS_E1_A2	CostOfSales
•	7		Other income	element	E1	IS_E1_A3	OtherIncome
•	8		Operating expenses	element	E1	IS_E1_A4	OperatingExpenses
•	9		Administrative expenses	element	E1	IS_E1_A5	AdministrativeExpenses
•	10		Staff costs	element	E1	IS_E1_A6	StaffCosts
•	11		Wages and salaries	element	E1	IS_E1_A7	WagesAndSalaries
•	12		Employer contributions, Staff costs	element	E1	IS_E1_A8	EmployerContributionsStaffCosts
-	13		Profit (Loss) before tax	element	E1	IS_E1_A9	ProfitLossBeforeTax
•	14		OPC:OC1,OC2,OC_	inclusion	H00004	H00004Hypercube	
•	15		Income tax expense	element	E1	IS_E1_A13	IncomeTaxExpense
•	16		Expenses, Total	element	E1	IS_E1_A80	ExpensesTotal

Commonalities with EBA taxonomies

- ▶ 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:
 - Common dimensions
 - Data Point Modelling
 - Common data types
 - Taxonomy architecture
 - Base primary items
 - Label constructions
 - Tools
 - etc

Use of codes for concepts

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



Filing indicators and assertions

- ▶ A reporter must file:
 - several "templates" at several moments; and / or
 - the same template at several moments, depending on one or more dimensions' valuee.g.: Balance sheet for "France" at T0 + 10 days
Balance sheet for "Other countries" at T0 + 25 days
- ▶ Each template is associated to one or more filing indicators: template + set of zero, one or more dimension values
- ▶ Assertions are dependant of the presence of one or more filing indicators (precondition)

Numeric checks generation

Primary Item Aggregation (PIA)

1	2	3	4	A	B	C	D	E
	1	IS_E1			Annotated			
	2	Income statement			Solo	Periodicity		
					[SOL]	[PE1][PE2][PE3]		
	3							
	4	Expenses			Europe [CE1]	Out of Europe [CE2]	All countries [CE_]	
	5	Revenue			A1	A1	A1	
	6	Cost of sales			A2	A2	A2	
	7	Other income			A3	A3	A3	
	8	Operating expenses			A4	A4	A4	
	9	of which: Administrative expenses			A5	A5	A5	
	10	Staff costs			= A6	= A6	= A6	
	11	• Wages and salaries			+ A7	+ A7	+ A7	
	12	• Employer contributions			+ A8	+ A8	+ A8	
	13	Profit (Loss) before tax			A9	A9	A9	
	14	Discontinued operations	[OC1]		A9	A9	A9	All operations, Continuing nor not [OC_]
	15	Continuing operations	[OC2]		A9	A9	A9	
	16	Income tax expense			A13	A13	A13	
	17	Expenses, Total			A80	A80	A80	
	18							

Numeric checks generation

Primary Item Aggregation (PIA)

1	2	3	4	A	B	C	D	E
	1	IS_E1		Annotated				
	2	Income statement			Solo	Periodicity		
	3				[SOL]	[PE1][PE2][PE3]		
	4	Expenses						
	5	• Revenue			Europe [CE1]	Out of Europe [CE2]	All countries [CE_]	
	6	• Cost of sales			+ • A1	+ • A1	+ • A1	
	7	• Other income			+ • A2	+ • A2	+ • A2	
	8	• Operating expenses			+ • A3	+ • A3	+ • A3	
	9	• of which: Administrative expenses			+ • A4	+ • A4	+ • A4	
	10	• Staff costs			A5	A5	A5	
	11	• Wages and salaries			+ • A6	+ • A6	+ • A6	
	12	• Employer contributions			A7	A7	A7	
	13	• Profit (Loss) before tax			A8	A8	A8	
	14	• Discontinued operations	[OC1]		• A9	• A9	• A9	All operations, Continuing nor not [OC_]
	15	• Continuing operations	[OC2]		A9	A9	A9	
	16	• Income tax expense			+ • A13	+ • A13	+ • A13	
	17	• Expenses, Total			= > A80	= > A80	= > A80	
	18							

Numeric checks generation Of Which Checks (OWC)

1	2	3	4	A	B	C	D	E
	1	IS_E1		Annotated				
	2	Income statement			Solo	Periodicity		
	3				[SOL]	[PE1][PE2][PE3]		
	4	Expenses			Europe [CE1]	Out of Europe [CE2]	All countries [CE_]	
	5	Revenue			A1	A1	A1	
	6	Cost of sales			A2	A2	A2	
	7	Other income			A3	A3	A3	
	8	Operating expenses			A4	A4	A4	
	9	of which: Administrative expenses			A5	A5	A5	
	10	Staff costs			A6	A6	A6	
	11	Wages and salaries			A7	A7	A7	
	12	Employer contributions			A8	A8	A8	
	13	Profit (Loss) before tax			A9	A9	A9	
	14	Discontinued operations	[OC1]		A9	A9	A9	All operations, Continuing nor not [OC_]
	15	Continuing operations	[OC2]		A9	A9	A9	
	16	Income tax expense			A13	A13	A13	
	17	Expenses, Total			A80	A80	A80	
	18							

Numeric checks generation

Dimensional Item Aggregation (DIA)

1	2	3	4	A	B	C	D	E
	1	IS_E1			Annotated			
	2	Income statement			Solo	Periodicity		
	3				[SOL]	[PE1][PE2][PE3]		
	4	Expenses			Europe [CE1]	Out of Europe [CE2]	All countries [CE_]	
	5	Revenue			<u>A1</u>	<u>A1</u>	= <u>A1</u>	
	6	Cost of sales			<u>A2</u>	<u>A2</u>	= <u>A2</u>	
	7	Other income			<u>A3</u>	<u>A3</u>	= <u>A3</u>	
	8	Operating expenses			<u>A4</u>	<u>A4</u>	= <u>A4</u>	
	9	of which: Administrative expenses			<u>A5</u>	<u>A5</u>	= <u>A5</u>	
	10	Staff costs			<u>A6</u>	<u>A6</u>	= <u>A6</u>	
	11	Wages and salaries			<u>A7</u>	<u>A7</u>	= <u>A7</u>	
	12	Employer contributions			<u>A8</u>	<u>A8</u>	= <u>A8</u>	
	13	Profit (Loss) before tax			= <u>A9</u>	= <u>A9</u>	= <u>A9</u>	
	14	Discontinued operations	[OC1]		+ <u>A9</u>	+ <u>A9</u>	+ <u>A9</u>	
	15	Continuing operations	[OC2]		+ <u>A9</u>	+ <u>A9</u>	+ <u>A9</u>	
	16	Income tax expense			<u>A13</u>	<u>A13</u>	= <u>A13</u>	
	17	Expenses, Total			<u>A80</u>	<u>A80</u>	= <u>A80</u>	
	18							

dimension value
underlined

dimension value
underlined

All operations, Continuing nor not
[OC_]

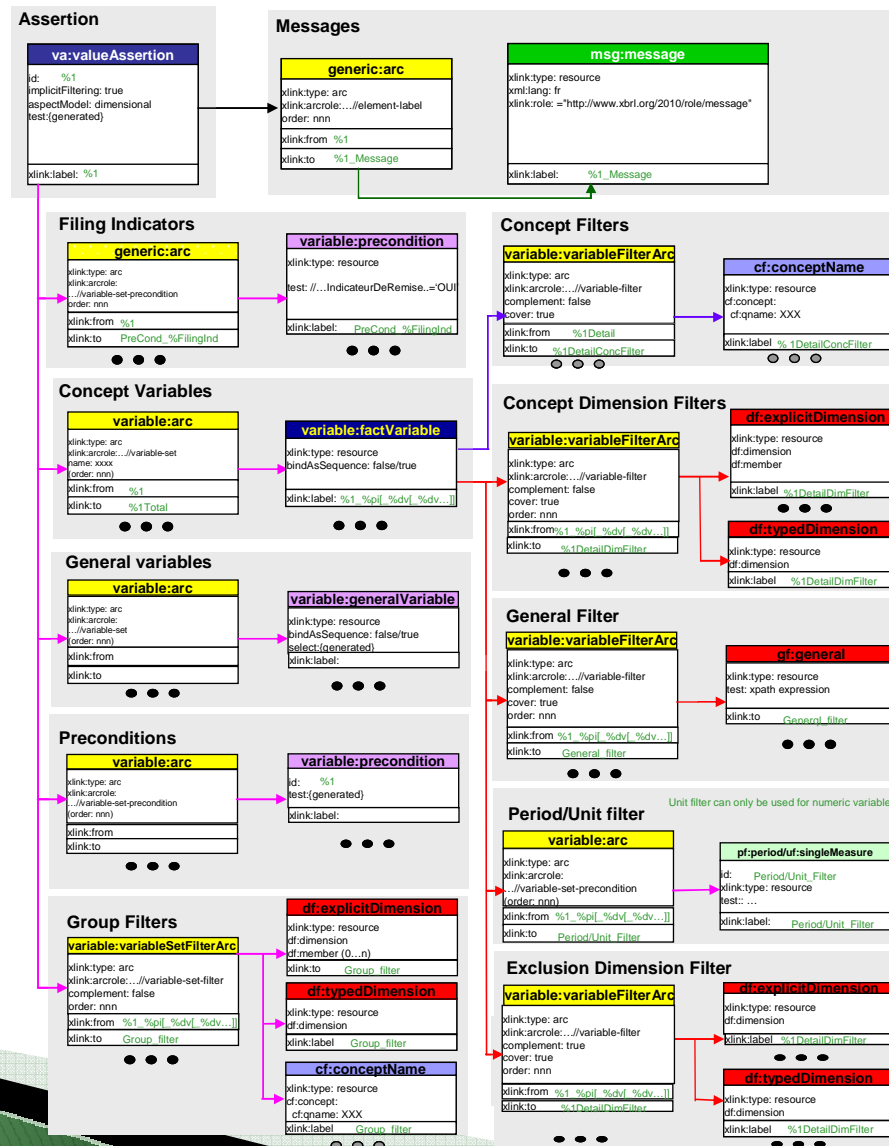
Specific Condition Check

- ▶ Using codes, giving labels
- ▶ Restrictions
 - [Dimensional restrictions: set of dimension values => combinations]
 - [Precondition(s): set of conditions]
 - [Externally controlled condition]
- ▶ Tolerance margin
- ▶ Condition (may be expressed with XPath)
 - Value assertion
 - Factors
 - Template (for documentation)
 - Primary items, or closure with list of primary items
 - [Dimensional characteristics: set of dimension values]
 - Constants

Expression of validations

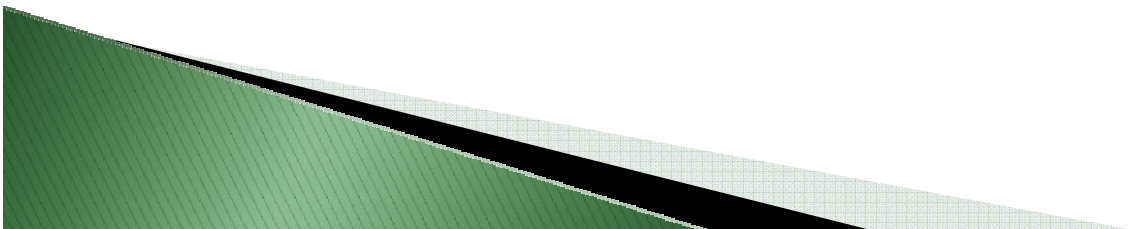
```
1  [AS_D1-00010]
2  Label = "Total SII amount" shall be equal to "Quantity" * "Unit price" + "Accrued interest"
3  Tolerance = 3000
4  Assertion = A26A = A22A * A23A + A30A
5
6  ; Log
7  ; (AS_D1)"Total SII amount" = (AS_D1)"Quantity" * (AS_D1)"Unit price" + (AS_D1)"Accrued interest"
8
9
10 [BS_C1-AS_D1-00010]
11 Label = "Property, plant and equipment held for own use", SII value in BS_C1 shall be equal to the
    sum of "Total SII amount", in AS_D1, for assets with CIC corresponding to Property, plant and
    equipment for own use, for assets that are not held in unit-linked or index-linked funds
12 Tolerance = 3000
13 Assertion = (BS_C1)A27B = SUM( ((AS_D1)A15A =~ "..(93|95)" && (AS_D1)A3A == false) ) (AS_D1)A26A)
14
15 ; Log
16 ; (BS_C1)"Property, plant and equipment held for own use" = SUM(((AS_D1)"CIC" =~ "..(93|95)" &&
    (AS_D1)"Asset held in unit linked and index linked funds, Boolean" == false) (AS_D1)"SII Amount"
```

Value assertion pattern



Data Point Modelling

- ▶ 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



Example: Solvency II Balance sheet template


BS_C1

Balance sheet

Annotated

Solo or group

Periodicity

Assets 

Goodwill
Deferred acquisition costs and other intangible assets
Deferred acquisition costs
Other intangible assets
Deferred tax assets
Property, plant & equipment held for own use
Pension benefit surplus
Investments (other than assets held for unit-linked funds)
Property (other than own use)
Participations
Equities
Equities - listed
Equities - unlisted
Bonds
Government Bonds
Corporate Bonds
Structured notes
Collateralised securities
Investment funds
Derivatives
Deposits other than cash equivalents
Loans & mortgages (except loans on policies)
Other investments
Assets held for unit-linked & index-linked
Loans on policies

Solvency II value	Statutory accounts valuation basis
	AS1
	AS24A
	AS24
A2	AS2
A26	AS26
A3	AS3
A25B	AS25B
A4=A5+A6+A7+A7A+A8+A8A+A8C+A8D+A9+A10A+A10B+A11+A14	AS4=AS5+AS6+AS7+AS7A+AS8+AS8A+AS8C+AS8D+AS9+AS10A+AS10B+AS11+AS14
A5	AS5
A6	AS6
	AS7B
A7	AS7
A7A	AS7A
	AS8E
A8	AS8
A8A	AS8A
A8C	AS8C
A8D	AS8D
A9	AS9
A10A	AS10A
A10B	AS10B
A14	AS14
A11	AS11
A12	AS12
A14A	AS14A

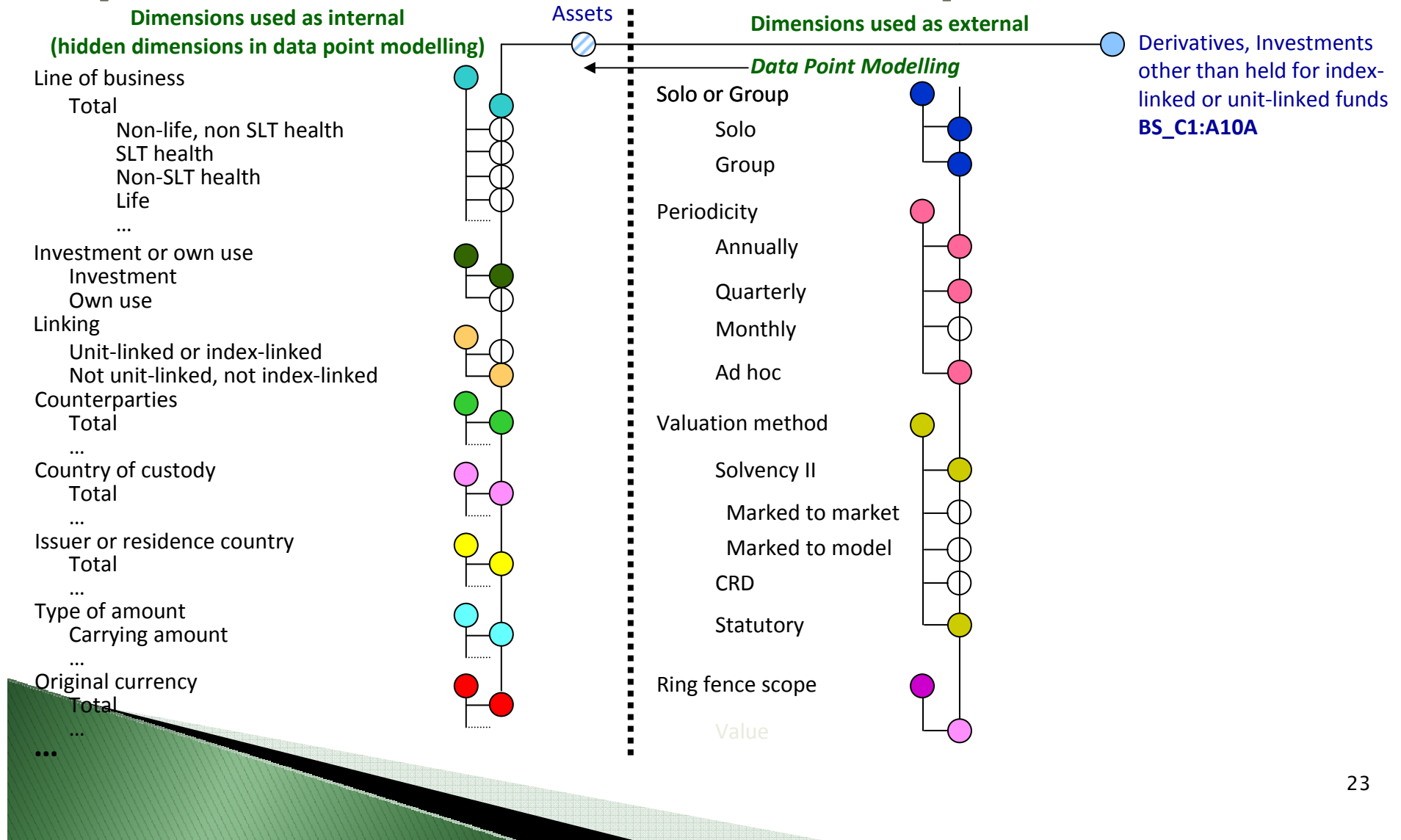
Data Point Modelling in highly dimensional taxonomies

http://www.bma.bm/xbrl/bs-c1/assets_12a_def	
Hypercube placeholder	
Hypercube	all (*)
Line of business [general]	hypercube-dimension (*)
Total	dimension-domain (*)
Type of assets	hypercube-dimension (*)
Derivatives	dimension-domain (*)
Investment or own use	hypercube-dimension (*)
Investment	dimension-domain (*)
Valuation general	hypercube-dimension (*)
Solvency II	dimension-domain (*)
Linking	hypercube-dimension (*)
Not unit-linked nor index-lined	dimension-domain (*)
Counterparties	hypercube-dimension (*)
Total	dimension-domain (*)
Country of custody	hypercube-dimension (*)
Total	dimension-domain (*)
Issuer country/country of residence	hypercube-dimension (*)
Total	dimension-domain (*)
Amount	hypercube-dimension (*)
Carrying amount	dimension-domain (*)
Consolidation scope	hypercube-dimension (*)
Solo	dimension-domain (*)
Original currency	hypercube-dimension (*)
Total	dimension-domain (*)
Assets	domain-member (*)

- ▶ Concept A10 no longer expressed
 - No labels
 - No references
 - No documentation
 - No more hierarchical presentation
- ▶ 11 dimensions
 - Expression of checks very long
 - Possible problems with mix of dimensions in assertions

Origin: BMA Solvency II taxonomy POC

From business concept to data point modelled concept



"Semantic" linkbase, bridge to data modelled items

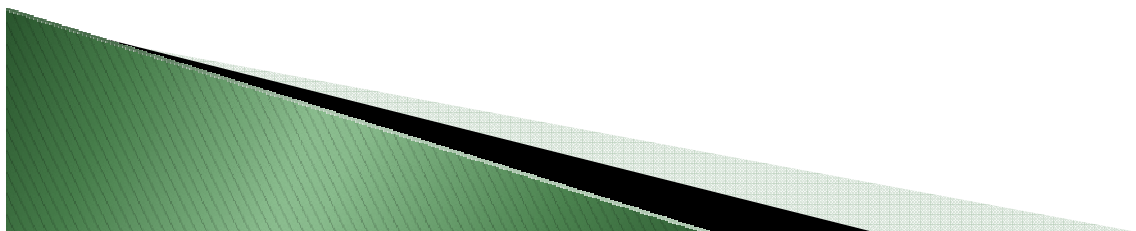
Possible ways for conversion:

- XBRL formulas
- XBRL Versioning
- Taxonomy comparison

Element	arcrole	order
D Definition Link		
http://eiopa.europa.eu/role/semantic_equivalence		
Derivatives		
Asset	is_equivalent (*)	1
Derivatives (Hypercube)	all (*)	1
Line of business	hypercube-dimension (*)	1
Total	dimension-domain (*)	1
Type of asset	hypercube-dimension (*)	4
Derivative product	dimension-domain (*)	1
Investment or own use	hypercube-dimension (*)	5
Investment	dimension-domain (*)	1
Valuation general	hypercube-dimension (*)	6
Solvency II	dimension-domain (*)	1
Linking	hypercube-dimension (*)	7
Nor unit-linked, nor index-linked	dimension-domain (*)	1
Country of custody	hypercube-dimension (*)	8
Total	dimension-domain (*)	1
Issuer country of country of residence	hypercube-dimension (*)	9
Total	dimension-domain (*)	1
Amount	hypercube-dimension (*)	10
Carrying amount	dimension-domain (*)	1
Original currency	hypercube-dimension (*)	11
Total	dimension-domain (*)	1
http://eiopa.europa.eu/role/BalanceSheet		
Derivatives		
Solo or group (Hypercube)	all (*)	1
Solo or group	hypercube-dimension (*)	1
Solo	dimension-domain (*)	1
Group	dimension-domain (*)	2
Periodicity	hypercube-dimension (*)	2
Annually	dimension-domain (*)	1
Quarterly	dimension-domain (*)	2
Ad hoc	dimension-domain (*)	3

Possible was for conversion

- XBRL formulas
- XBRL Versioning
- Taxonomy comparison



Thank you

Any questions?

