EFFICIENT APPROACH TO DATA QUALITY ASSURANCE

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IMPORTANCE OF DATA QUALITY

Data completeness

Data consistency

Data accuracy

IS IT GOOD TO MOVE VALIDATION INTO XBRL?

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We believe so

- Known, standardized format

- Vendor independence

- Technology independence

- Distributed as a part of a taxonomy

- Transparent for anyone using the taxonomy

IS NOT IT HARD TO IMPLEMENT IT IN XBRL?

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Might be hard

IS NOT IT HARD TO IMPLEMENT IT IN XBRL?

Might be hard

Might be easy

PROCESS OF FORMULA CREATION

S.02.02.01.01

			Total value of all currencies	Value of the solvency II reporting currency	Value of remaining other currencies
			C0020	C0030	C0040
Assets					
	Investments (other than assets held for index-linked and unit-linked contracts)	R0020	100.00	40.00	60.00

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THE HARD WAY

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	Investments (other than assets held for index-linked and unit-linked contracts)	R0020	100.00	40.00	60.00

s2md_met:mi263
s2c_dim:BL – s2c_LB:x91
s2c_dim:VG – s2c_AM:x80

s2md_met:mi263
s2c_dim:RC – s2c_CU:x3
s2c_dim:BL – s2c_LB:x91
s2c_dim:VG – s2c_AM:x80

s2md_met:mi263
s2c_dim:RC – s2c_CU:x4
s2c_dim:BL – s2c_LB:x91
s2c_dim:VG – s2c_AM:x80

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s2c_dim:RC – s2c_CU:x4
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s2c_dim:VG – s2c_AM:x80

```xml
<va:valueAssertion xlink:type="resource" xlink:label="valueAssertion
aspectModel="dimensional" test="$a + $b = $c"/>
<variable:factVariable xlink:type="resource" xlink:label="factVariab
fallbackValue="0"/>
<variable:variableArc xlink:type="arc" xlink:arcrole="http://xbrl.or
"factVariable" xlink:title="valueAssertion to factVariable" priority
<bf:andFilter xlink:type="resource" xlink:label="andFilter" xlink:ti
<variable:variableFilterArc xlink:type="arc" xlink:arcrole="http://x
"andFilter" xlink:title="factVariable to andFilter" priority="0" ord
<bf:orFilter xlink:type="resource" xlink:label="orFilter" xlink:titl
<variable:variableFilterArc xlink:type="arc" xlink:arcrole="http://x
"orFilter" xlink:title="andFilter to orFilter" priority="0" order="1
<df:explicitDimension xlink:type="resource" xlink:label="explicitDim
  <df:dimension>
    <df:qname>eba_dim:PRP</df:qname>
  </df:dimension>
  <df:member>
    <df:qname>eba_PL:x10</df:qname>
  </df:member>
</df:explicitDimension>
<variable:variableFilterArc xlink:type="arc" xlink:arcrole="http://x
"explicitDimension" xlink:title="orFilter to explicitDimension" pri
<bf:orFilter xlink:type="resource" xlink:label="orFilter_2" xlink:ti
<variable:variableFilterArc xlink:type="arc" xlink:arcrole="http://x
"orFilter_2" xlink:title="andFilter to orFilter_2" priority="0" ord
<df:explicitDimension xlink:type="resource" xlink:label="explicitDi
  <df:dimension>
    <df:qname>eba_dim:TRI</df:qname>
  </df:dimension>
```

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<va:valueAsserti
aspectModel="dim
<variable:factVa
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  <df:dimension>
    <df:qname>eba_dim:TRI</df:qname>
  </df:dimension>
```

```
test="$a + $b = $c"
```

WHAT, IF WE COULD WRITE ONLY THE EXPRESSION?

THE EASY WAY

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S.02.02.01.01

{T_S.02.02.01.01, C_C0020, R_R0020} =
   {T_S.02.02.01.01, C_C0030, R_R0020} + {T_S.02.02.01.01, C_C0040, R_R0020}

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　　　　{T_S.02.02.01.01, C_C0030, R_R0020} + {T_S.02.02.01.01, C_C0040, R_R0020}

ALLOWS FOR ANY XPATH 2.0 EXPRESSION

- Simple arithmetic expressions

  $a = 1000

- Conditional expressions

  if($a= 0) then $b= 100

- Custom functions

  my_function($a) = 123

- and any other XPath 2.0 expression

ALLOWS FOR ANY XPATH 2.0 EXPRESSION

- Simple arithmetic expressions

  {T_C60, R_020, C_030} = 1000

- Conditional expressions

  if({T_C40, R_010, C_020} = 0) then {T_C20, R_030, C_060} = 100

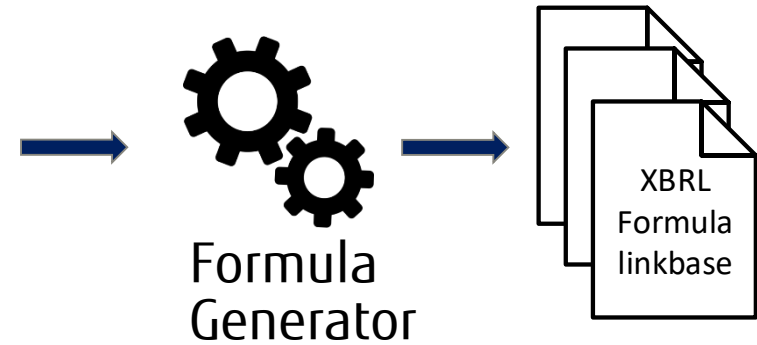- Custom functions

  my_function({T_C20, R_NNN, C_030}) = 123

- and any other XPath 2.0 expression

FORMULA GENERATOR

id	expression	precondition	fallback value	severity	error message
v105	if ({T_C 24.00, R_010, C_120} != 0) then (({T_C 24.00, R_010, C_140} >= 0) and ({T_C 24.00, R_010, C_140} <= 250)) else (true())	C 24.00	true	WARNING	Implausible values for the market risk field Number of overshootings during previous 250 working days.
v275	[T_C 06.02, R_NNN] -> [if (not(empty({C_010}))) then (not(empty({C_030})) and not(empty({C_040})) and not(empty({C_050}))) else (true())]	C 06.02	true	WARNING	C 06.02, columns 010, 030, 040 and 050 must be provided.
v210	not(empty({T_C 04.00, R_210, C_010})) and {T_C 04.00, R_210, C_010} > 0	C 04.00	true	WARNING	The 17.65% CET1 threshold (C 04.00, R 210, C 010) should always be reported and be greater than zero.
v455	[T_C 16.00.a, R_110, R_120] -> [iaf:numeric-equal({C_010}, iaf:numeric-multiply({C_040}, 0.035))]	C 16.00.a	true	ERROR	The relevant indicator is a normalised income indicator equal to the nominal amount of loans and advances multiplied by 0,035.

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Formula Generator

XBRL Formula linkbase

SOLUTION EVALUATION CRITERIA

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- Knowledge requirements
- Error-proneness
- Maintainability
- Transparency
- General effort

FUTURE ENHANCEMENTS

- Multi-period validation

- Multi-instance validation

- Modularization

THANK YOU