

Non-programmer's support of Schematron assertions

G. Ken Holman

Schematron expression of data integrity rules

https://docs.google.com/spreadsheets/d/16Nj_hW5_T_2Z2Hgd_vJHGx47iwwW-RIA/view

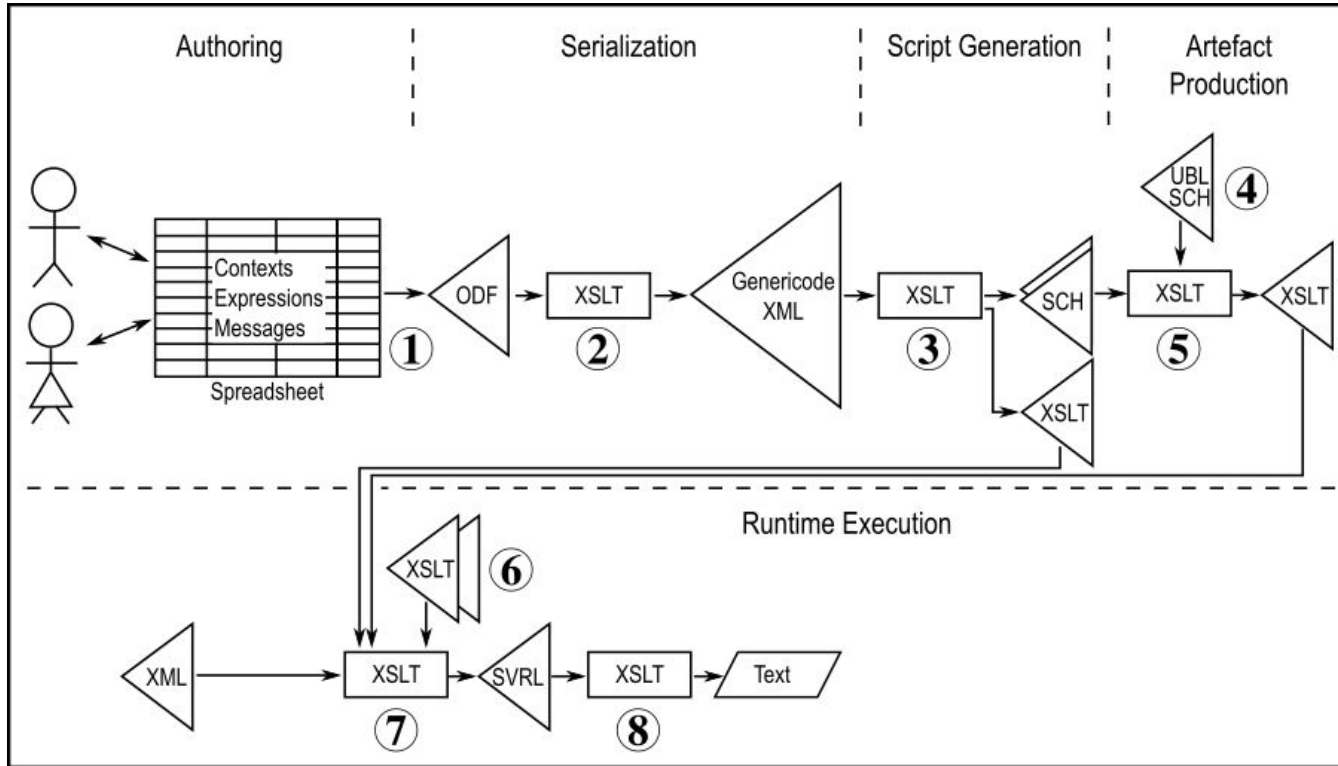
	A	K	L	M	N
1	BPC ID	Schematron Context	Schematron Assertion	Error Message	Data Integrity Rules
166	NABT-096	/#/cac:AllowanceCharge/cac:TaxCategory	count (cbc:Percent) <= 1	More than one document level discount tax rate exists.	Cannot have more than one Document level discount tax rate
175	NABT-102	/#/cac:AllowanceCharge/cac:TaxCategory	bpc:codelist(cbc:ID,'UNECE-5305')	Invalid Document level charge tax category code.	Invoiced Item Tax Category Code must reflect value from United Nations Economic Commission for Europe (UNECE) – (UNTDID) D. 21B – Duty or tax or fee category code (Subset of UNCL5305)

+ ☰ 16 Invoice, Credit Note ▾ Application Response ▾ Document Status ▾

The "#" is replaced with the compressed document type name from the comma-separated list in the spreadsheet tab.

GitHub push action recreates the validation artefacts

<https://github.com/bpc-einvoicing/bpc-semantic-spreadsheet-tools#readme>



GitHub README.md excerpt <https://github.com/bpc-einvoicing/bpc-semantic-spreadsheet-tools#readme>

1. The Google spreadsheet is exported as an ODF file.
2. The worksheets are extracted from the ODF file to create a genericcode XML file of rows and columns.
3. The worksheets are analyzed to create for each customization of each document type two Schematron scripts: the shell "bpc/ZZZ/BPC-ZZZ-vX.Y-WWWWWWWW-Data-Integrity-Constraints.sch" script that imports other Schematron scripts, the detailed assertions "bpc/ZZZ/support/BPC-ZZZ-vX.Y-WWWWWWWW-Assertions.pattern.sch" script that is one of the scripts being imported, and the shell "bpc/ZZZ/BPC-ZZZ-WWWWWWWW-Data-Integrity-Constraints.xsl" XSLT runtime invocation artifact
4. The other Schematron script that is imported is the "bpc/ZZZ/support/UBL-DocumentConstraints-2.3-pattern.sch" set of assertions obtained from the <http://docs.oasis-open.org/ubl/os-UBL-2.3/cva/> directory.
5. The Schematron transformation process "pipeline-for-svrl.xsl" from the SchXSLT GitHub project at <https://github.com/schxslt/schxslt> (schxslt-v.v.v-xslt-only.zip" release package unzipped and renamed into the "utilities/schematron/schxslt" subdirectory) interprets the Schematron scripts to create the runtime artefact "bpc/ZZZ/support/BPC-ZZZ-vX.Y-WWWWWWWW-Data-Integrity-Constraints.xsl" to be imported by the shell invocation stylesheet.
6. The two support stylesheets are maintained separately: the "bpc/ZZZ/support/BPC-vX.Y-Code-Lists.xsl" fragment (synthesized with "bpcodelist2xsl.xsl" as part of the GitHub Action processing; not depicted in this diagram) and the "bpc/ZZZ/support/BPC-Schematron-Support.xsl" fragment (authored by hand), both of which satisfy the custom BPC function invocations utilized in the authored spreadsheet expressions.
7. At runtime execution the XML to be analyzed is transformed into an XML instance of the Schematron Validation Results Language (SVRL) vocabulary using the "bpc/ZZZ/BPC-ZZZ-WWWWWWWW-Data-Integrity-Constraints.xsl" invocation stylesheet.
8. The "val/testSVRL4UBLerrors.xsl" XSLT stylesheet is used to interpret the SVRL results in the context of the demonstration validation test environment. Users can create their own interpretation of SVRL for their own production environment.

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XML Prague 2022 - Schematron Users Meetup

XPath patterns and addresses augmented with navigation

```
<rule context="/Invoice:Invoice/cac:AllowanceCharge/cac:TaxCategory
      (:NABT-096 NABT-102 Row 166 175 Tab 'Invoice, Credit Note:')">
  <assert test="count (cbc:Percent) &lt;= 1 (:NABT-096 Row 166 Tab 'Invoice, Credit Note:')"
    >More than one document level discount tax rate exists. (:NABT-096 Row 166 Tab 'Invoice,
Credit Note:')</assert>
  <assert test="bpc:codelist(cbc:ID,'UNECE-5305') (:NABT-102 Row 175 Tab 'Invoice, Credit
Note:')">Invalid Document level charge tax category code. (:NABT-102 Row 175 Tab 'Invoice,
Credit Note:')</assert>
</rule>
```

SVRL report massaging for UBL contexts

```
<svrl:failed-assert
  location="/Q{urn:oasis:names:specification:ubl:schema:xsd:Invoice-2}Invoice[1]"
  test="normalize-space(cbc:CustomizationID) =
'urn:oasis:names:specification:ubl:schema:xsd:Invoice-2::Invoice##bpc-0.5-data-Core' (:NABT-024
Row 41 Tab 'Invoice, Credit Note:')">
  <svrl:text>Specification Identifier not specified or value specified is not valid.
(:NABT-024 Row 41 Tab 'Invoice, Credit Note:')</svrl:text>
</svrl:failed-assert>
```

... becomes:

```
2. Specification Identifier not specified or value specified is not valid. /Invoice /
normalize-space(cbc:CustomizationID) =
'urn:oasis:names:specification:ubl:schema:xsd:Invoice-2::Invoice##bpc-0.5-data-Core' (:NABT-024 Row 41
Tab 'Invoice, Credit Note:')
```

SVRL report massaging for UBL contexts (cont.)

```
<svrl:failed-assert
location="/Q{urn:oasis:names:specification:ubl:schema:xsd:Invoice-2}Invoice[1]/Q{urn:oasis:names:specification:ubl:schema:xsd:CommonAggregateComponents-2}AccountingSupplierParty[1]/Q{urn:oasis:names:specification:ubl:schema:xsd:CommonAggregateComponents-2}Party[1]/Q{urn:oasis:names:specification:ubl:schema:xsd:CommonAggregateComponents-2}PartyLegalEntity[1]/Q{urn:oasis:names:specification:ubl:schema:xsd:CommonBasicComponents-2}CompanyID[1]"
  test="count (@schemeID) = 1 (:NABT-030-1 Row 53 Tab 'Invoice, Credit Note:')">
  <svrl:text>Scheme Identifier does not exist when Supplier - Accounts ReceivableLegal
Registration Identifier is provided. (:NABT-030-1 Row 53 Tab 'Invoice, Credit
Note:')</svrl:text>
</svrl:failed-assert>
```

... becomes:

3. Scheme Identifier does not exist when Supplier - Accounts ReceivableLegal Registration Identifier is provided. /Invoice/cac:AccountingSupplierParty[1]/cac:Party[1]/cac:PartyLegalEntity[1]/cbc:CompanyID[1] / count (@schemeID) = 1 (:NABT-030-1 Row 53 Tab 'Invoice, Credit Note:')

Data and "internal" error reports

```
#####  
Validating using customization "Core" and type "Invoice": "BPC-test-core-TAX.xml"  
#####  
==== Phase 1: XSD schema validation ====  
No schema validation errors.  
==== Phase 2: BPC customization "Core" data integrity validation ====  
1. Business process type not specified or value specified is not valid. /Invoice /  
normalize-space(cbc:ProfileID) = 'bpc-0.5-process#Invoice' (:NABT-023 Row 38 Tab 'Invoice, Credit Note':)  
2. Specification Identifier not specified or value specified is not valid. /Invoice /  
normalize-space(cbc:CustomizationID) =  
'urn:oasis:names:specification:ubl:schema:xsd:Invoice-2::Invoice##bpc-0.5-data-Core' (:NABT-024 Row 41 Tab  
'Invoice, Credit Note':)  
Count of data errors: 2  
  
INTERNAL ERROR 1. Suppressed rule: "cac:TaxCategory (:NABT-118 NABT-927 Row 200 251 Tab 'Invoice, Credit  
Note':)" shadowed by rule: "/Invoice:Invoice/cac:AllowanceCharge/cac:TaxCategory (:NABT-095 NABT-096 NABT-102  
Row 164 165 174 Tab 'Invoice, Credit Note':)"  
Count of internal errors to be reported: 1
```

The following error report is simply the exit mechanism and can be ignored:
Error in xsl:message/@terminate on line 127 column 34 of testSVRL4UBLerrors.xsl:
XTMM9000: Processing terminated by xsl:message at line 127 in testSVRL4UBLerrors.xsl
Processing terminated by xsl:message at line 127 in testSVRL4UBLerrors.xsl

Questions for the group:

1. Anything better than "#" for the document type wildcard?
- 2.