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ART-DECOR for software implementers: validation

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ART-DECOR validation



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Topics in this talk:

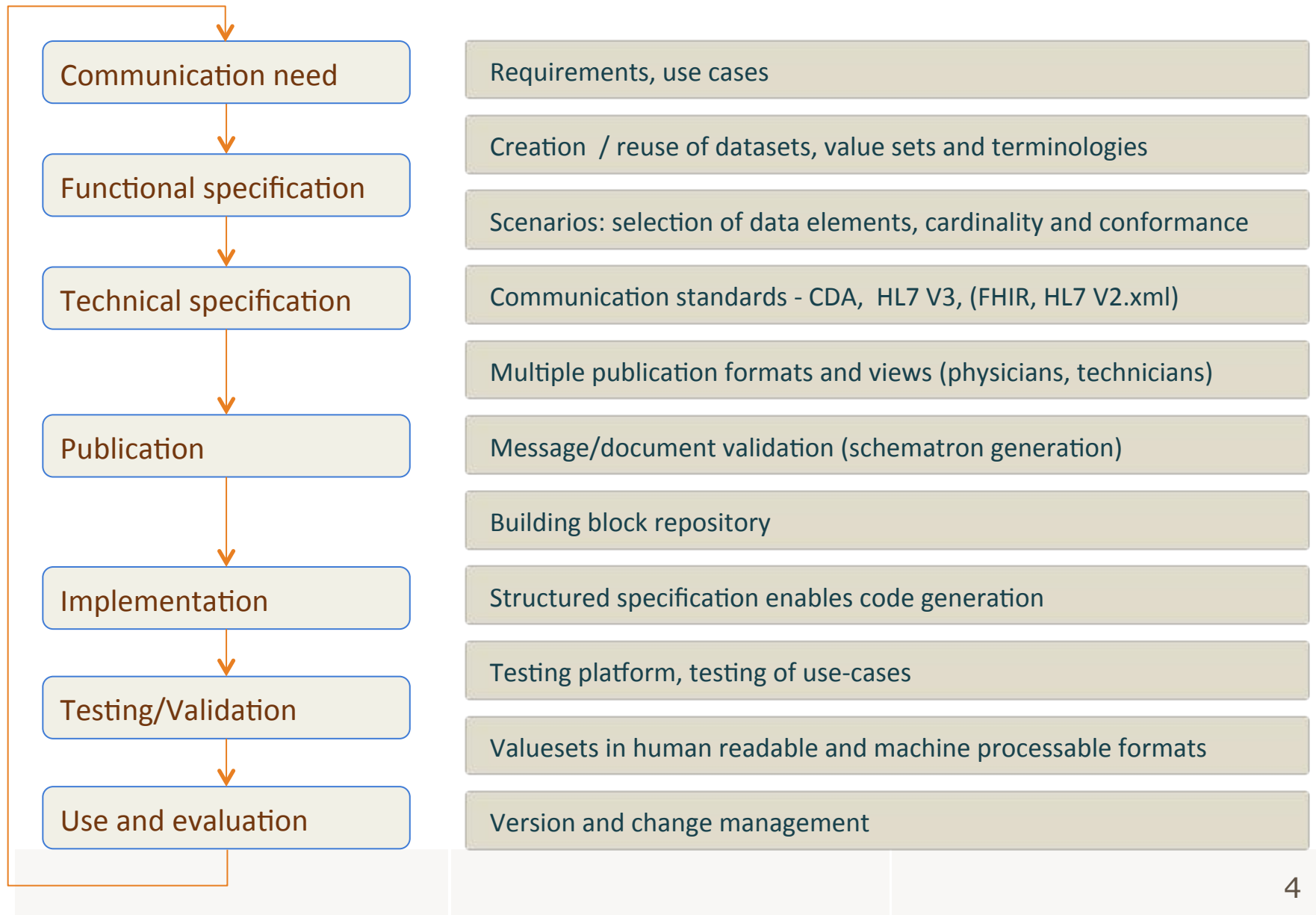
- **Overview** of information standards creation flow
- ..

Activities at Nictiz

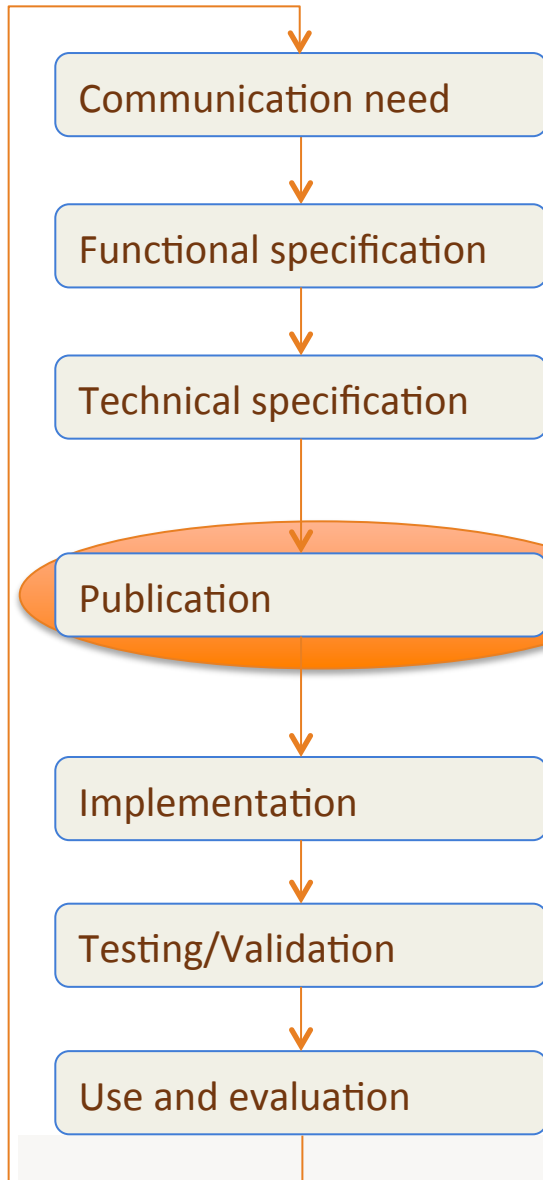
- Standardization & Interoperability
 - Health information standards
 - Testing/qualification of vendors
 - SNOMED CT Release Centre (terminology)
 - Terminology browsers/editors
 - Also: ATC, ICD-10, ICF, LOINC, ..

ART-DECOR overview

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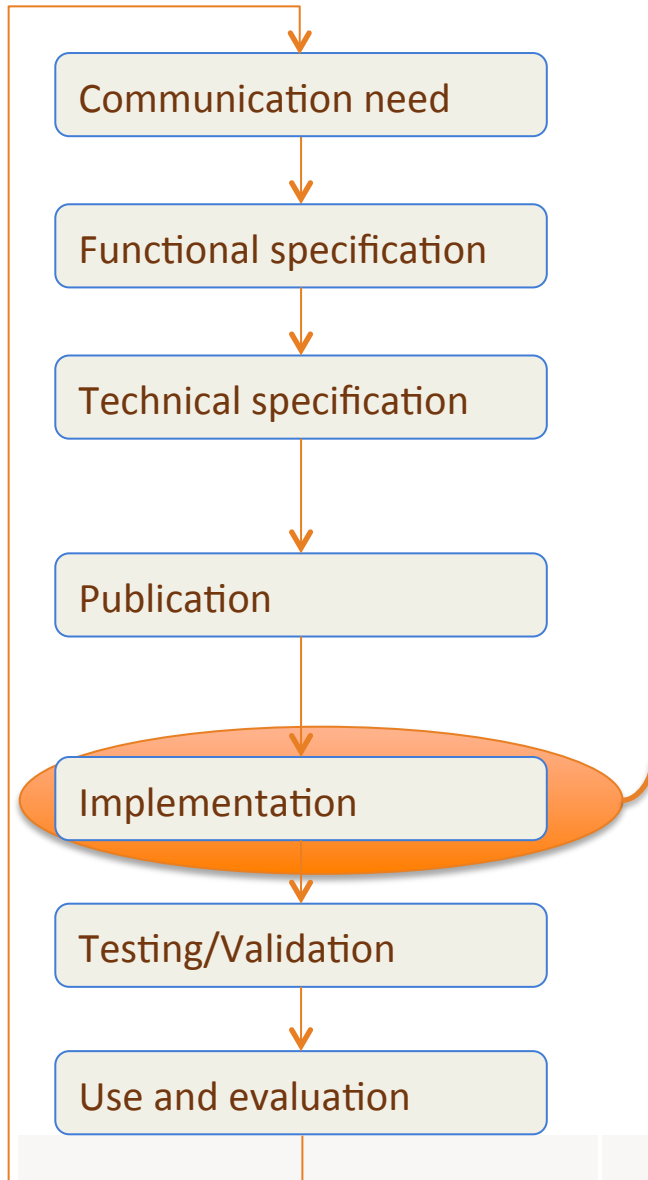
Publication



- **Snapshot** at date/time
- **Self contained** version
- Result is a structured format: **html, xml, schematron**
- Result contains: **datasets, valuesets, transactions, templates**
- Strict format: **quality control**
- Add XML-materials: instance examples

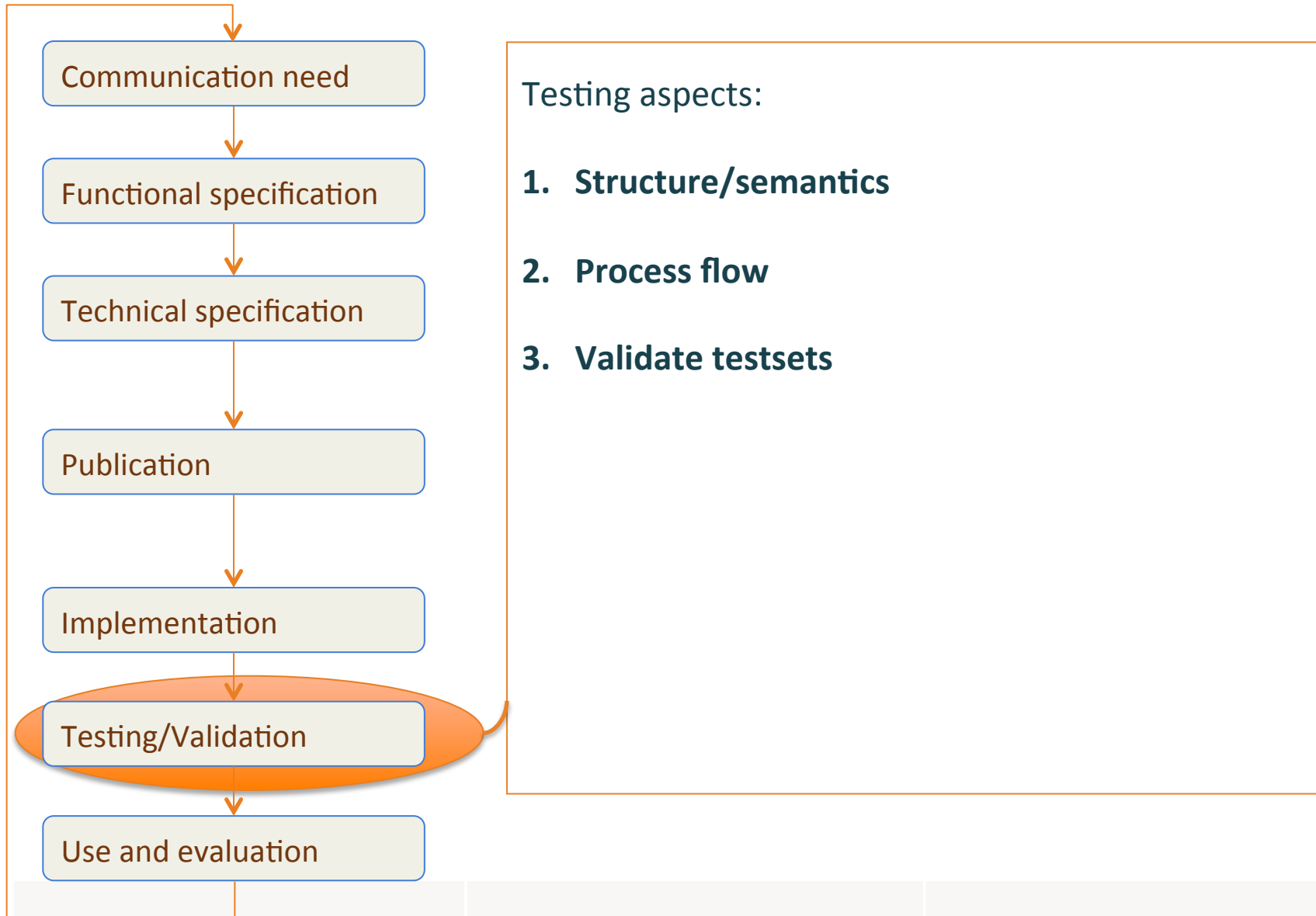
Implementation

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- **Structured** format
- **Parse** information standard: for instance datasets/valuesets

Testing/validation



Testing/validation: structure/semantics

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- Validate instances against schematron: do they conform to the template?
- Minimum requirements:
 - Scenario/Transaction
 - Template(s)
 - Optional: dataset, valuesets
- Create publication
- Example schematron output

Testing/validation: structure/semantics

- Publication: template (and schematron)

| Item | DT | Card | Conf | Desc |
|-------------------------------|-------------|---|------|--|
| hl7:consumable | | 1 .. 1 | M | |
| └ @typeCode | | 1 .. 1 | F | CSM |
| └ hl7:manufacturedProduct | | 1 .. 1 | M | |
| └ @classCode | | 1 .. 1 | F | MANU |
| └ hl7:manufacturedLabeledDrug | | 1 .. 1 | M | |
| └ @classCode | | 1 .. 1 | F | MMAT |
| └ @determinerCode | | 1 .. 1 | F | KIND |
| └ hl7:code | CE | 1 .. 1 | R | |
| | CONF | De waarde van @code moet komen uit waardelijst 2.16.840.1.113883.2.4.3.36.77.11.28 Medicatie coloscopie (DYN/ | | |
| └ hl7:name | ST | 0 .. 1 | | Naam medicatiemiddel indien niet in het codelijst bij code |

Validation (17)

Files (17)

Send Query

Send message

| Name | File | Root Element | Date | From |
|--|---|------------------|------------------------|----------|
|  Colonoscopy study 21 may 2012 | POCD_EX000002_T4_20140326T180332_test-4-afwijkingen.xml | ClinicalDocument | 2015-02-03 22:15:39 | Vendor A |

Details

| | |
|------------|---|
| Message Id | 2.16.840.1.113883.2.4.99.3.22 - |
| Patient | 228454128, |
| Filename | POCD_EX000002_T4_20140326T180332_test-4-afwijkingen.xml |

HTML view message

View message

Schema Errors: 1


Description


 Attribute 'bogus' is not allowed to appear in element 'id'.


Schematron Errors: 3

Description

Path

-  (CDAreCORDTargetMDL): element hl7:id[not(@root='2.16.840.1.113883.2.4.6.3')] is required [min 1x].

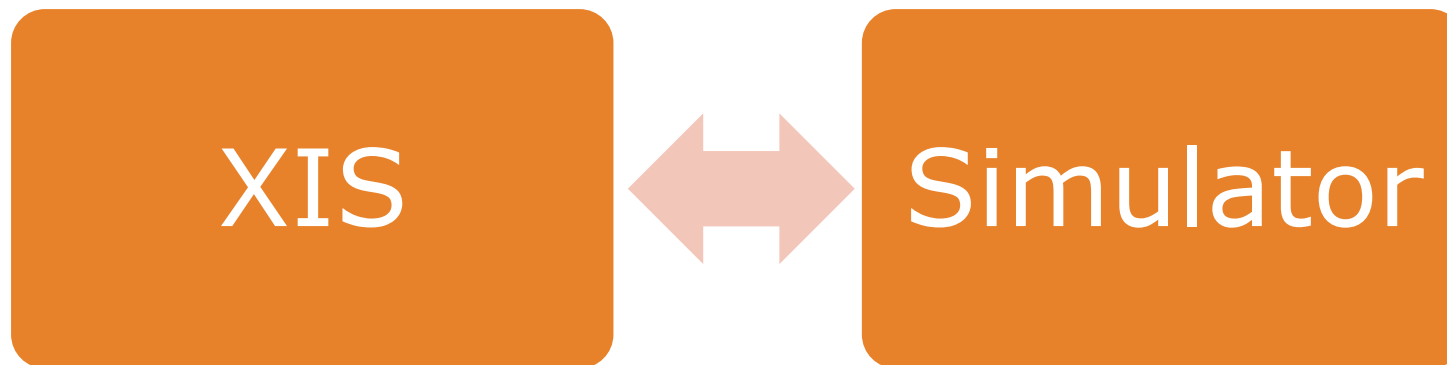
/hl7:ClinicalDocument[1]/hl7:recordTarget[1]/hl7:patient
-  (Medicationcoloscopy): 'consumable' is gedefinieerd als gesloten en dit element 'manufacturedProduct' is niet toegestaan, of niet toegestaan met deze inhoud. Mogelijk betreft dit het templateld, code, of id.

/hl7:ClinicalDocument[1]/hl7:component[1]/hl7:structure
/hl7:component[3]/hl7:section[1]/hl7:entry[1]/hl7:organ
/hl7:component[1]/hl7:substanceAdministration[1]/hl7:
/hl7:manufacturedProduct[1]
-  (Medicationcoloscopy): element
hl7:manufacturedProduct[hl7:manufacturedLabeledDrug[hl7:code[concat(@code,@codeSystem)=doc('include/voc-
2.16.840.1.113883.2.4.3.36.77.11.28-DYNAMIC.xml')/*valueSet/conceptList/concept/concat(@code,@codeSystem)
...]]]

/hl7:ClinicalDocument[1]/hl7:component[1]/hl7:structure
/hl7:component[3]/hl7:section[1]/hl7:entry[1]/hl7:organ
/hl7:component[1]/hl7:substanceAdministration[1]/hl7:

Testing/validation: Process flow

- Does the process flow conform to standard?
- Requirements:
 - WSDL
 - Outgoing and response templates



Testing/validation: Testsets

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- Does the instance conform to testset?
- Testset:
 - Number of times item must occur AND/OR
 - Require specific values
 - Reference to dataset concept
- Patient should be scheduled to return for screening

```
<testset name="MDL verslag">
  <release uri="http://decor.nictiz.nl/decor/services/RetrieveTransaction?id=2.16.840.1.113883.2.4.3.36
  <test id="2.16.840.1.113883.2.4.3.46.99.3.19.1" name="rivmsp-test-1-lokatie" transactionRef="2.16.840
    <name language="nl-NL">1. Coloscopieverslag waarbij niet de maximale lokatie bereikt is</name>
    <desc language="nl-NL">1. Coloscopieverslag waarbij niet de maximale lokatie bereikt is</desc>
    <suppliedConcepts>
      <!-- Restrictions on multiplicities -->
      <concept multiplicity="1" ref="2.16.840.1.113883.2.4.3.36.77.2.3.140152">Periode vervolg surv
      ...
      <!-- Restrictions on values -->
      <concept occurrence="1" assert="@code='73761001:408730004=64695001'" ref="2.16.840.1.113883.2
        moet "Nieuwe scopie in verband met onvolledige scopie/voorbereiding" zijn.</concept>
      ...
```



Testing/validation: Testsets (2)

- Template

| Item | DT | Card | Conf | Omschrijving |
|-------------------|--------|--|---|--|
| h17:act | | | | |
| @classCode | | 1..1 | F | PCPR |
| @moodCode | | 1..1 | F | INT |
| h17:templateId | II | 1..1 | | |
| @root | | 1..1 | F | 2.16.840.1.113883.2.4.3.36.10.372 |
| h17:code | CE | 1..1 | M | |
| | CONF | Code uit waardelijst: 2.16.840.1.113883.2.4.3.36.77.11.39 <i>Vervolgbeleid (Dynamisch)</i> | | |
| | | |  | rivm-dataelement2014b-140150 Definitief Vervolgbeleid |
| h17:text | ED | 0..1 | O | |
| h17:effectiveTime | IVL_TS | 0..1 | R | |
| h17:width | PQ | 1..1 | | |
| | | |  | rivm-dataelement2014b-140152 Periode vervolg surveillance/col |
| @unit | | 1..1 | F | mo |





Testing/validation: Testsets (3)

- Testset schematron: element width must occur once
 - Patient should be scheduled to return for screening

```
<sch:assert role="error" test="count(  
  /hl7:ClinicalDocument  
  /hl7:component  
  /hl7:structuredBody  
  /hl7:component[hl7:section[hl7:templateId[@root='2.16.840.1.113883.2.4.3.36.10.207']]]  
  /hl7:section  
  /hl7:entry[hl7:act[hl7:templateId[@root='2.16.840.1.113883.2.4.3.36.10.372']]]  
  /hl7:act/hl7:effectiveTime  
  /hl7:width[not(@negationInd='true')])=1">  
  Periode vervolg surveillance/coloscopie moet 1 keer voorkomen.  
</sch:assert>
```

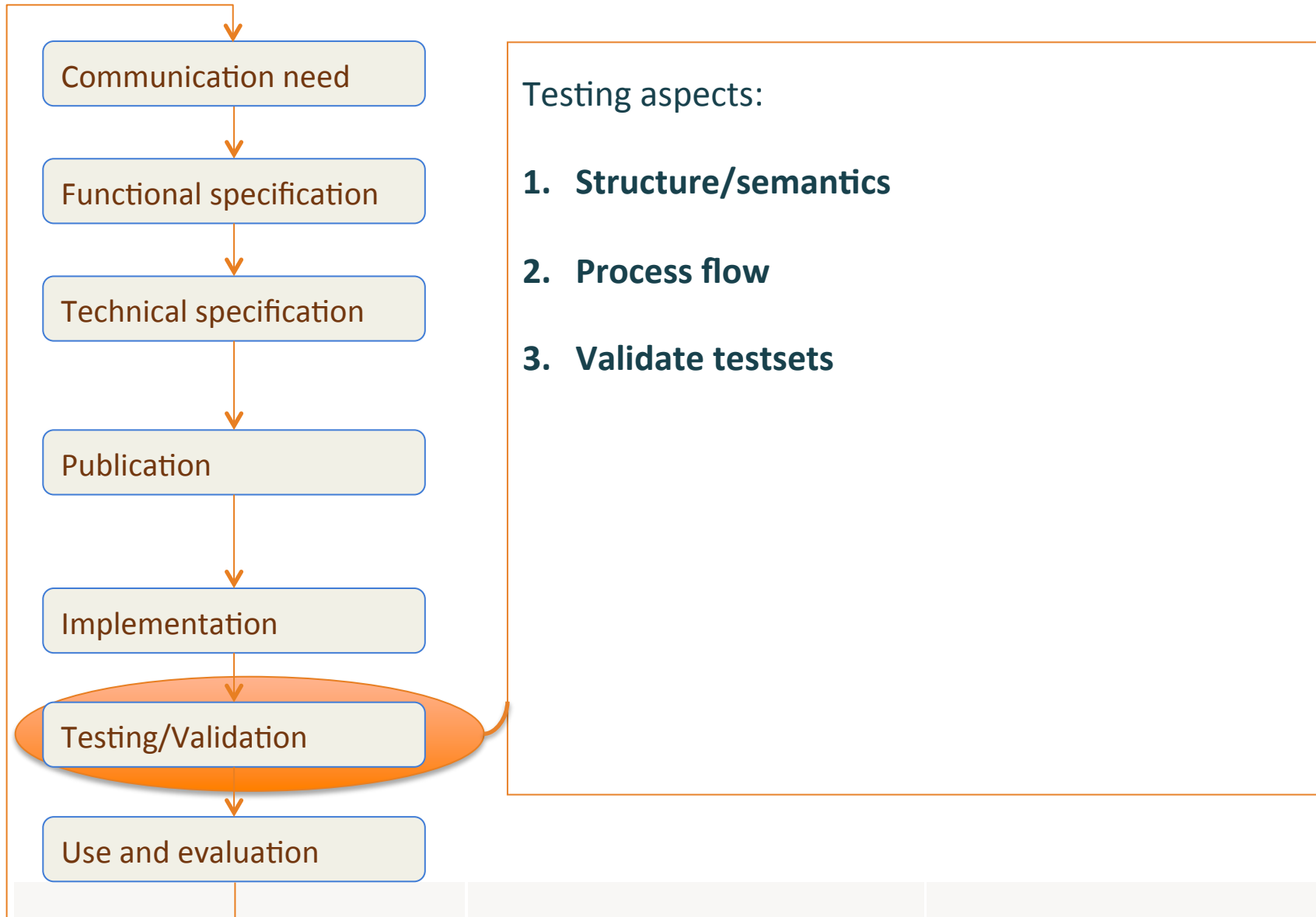
Testing/validation: Testsets (4)

- Testset schematron: error in instance

| RIVM MDL testsuite 20140902 | | | |
|---|---------------|---|---|
| Status | ● Test failed | | Application role |
| Description | | | |
| Test | Description | Message | Validation Date-time |
|  rivmsp-test-1-lokatie [View message] | | POCD_EX000002_T4_20140425T120709_test-1-maxLocation.xml [Select] | 2015-02-06 22:21:19 [Validate] |
|  rivmsp-test-2-incidenten [View message] | | MDL-test-2-incidenten.xml [Select] | 2014-10-03 10:37:26 [Validate] |
|  rivmsp-test-3-voorbereiding [View message] | | MDL-test-3-voorbereiding.xml [Select] | 2015-01-19 15:06:36 [Validate] |
|  rivmsp-test-4-wel-afwijkingen [View message] | | MDL-test-4-afwijkingen.xml [Select] | 2015-01-19 09:06:25 [Validate] |

| 2 Errors | | |
|---|--------------------------|----------|
| Description | Path | Quantity |
| Periode vervolg surveillance/coloscopie moet 1 keer voorkomen. | /hl7:ClinicalDocument[1] | 1 |
| Definitief Vervolgbeleid moet "Nieuwe scopie in verband met onvolledige scopie/voorbereiding" zijn. | /hl7:ClinicalDocument[1] | 1 |

Testing/validation



Questions?

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Nictiz 



More info about Nictiz: www.nictiz.nl

ART-DECOR:

Information: <http://www.art-decor.org/mediawiki>

Working environment: <http://www.art-decor.org/art-decor>

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