Metadata – Check, Network Services – Check, Data … - Validation and Testing in INSPIRE

INSPIRE Conference 2014

Aalborg, 16-20 June 2014
Issues

- a great **need of tools for validation** (metadata, service and data)
- different tools for validation of metadata and services available, but these might include slightly different interpretations of standards
- Software vendors claim that their products are INSPIRE-compliant without having undergone a **certification process**
- the *abstract test suites* in Inspire data specifications define the set of tests to be applied but there is no reference implementation of those abstract test suites yet
Proposed change or action (MIWP-5)

- Develop a commonly agreed European validator for INSPIRE metadata, network services (incl. testing of quality of service criteria) and data sets.
  - Testing should focus on interoperability of applications and services
  - Legal compliance cannot be checked based on conformity with TG
  - The validation rules should be made explicit so that data providers in Members States know what is validated and how it is validated
  - The MIG should jointly agree on the tests to be included in the validator
  - Investigate feasibility of executable tests and/or tools or services for checking conformance of datasets with the data specifications
Proposed change or action (MIWP-5)

- Establish a rule that all new TG need to include abstract test suites and executable tests.
- Discuss the possibilities for setting up a compliance certification facility and process similar to the OGC.
Outcome (MIWP-5)

- Common validation tool(s)
- Commonly agreed tests (validation rules)
  - Metadata
  - Network services
  - Data Sets
- Policies and procedures of validation and testing (INSPIRE testing maintenance framework), e.g. rules for developing/maintaining tests
- Feasibility study of setting up a compliance certification facility and process similar to OGC CITE
## Scope of validation and conformity testing

Testing IR requirements based on technical solution(s) given by TG

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IR Req. 1</td>
<td>TG Req. 1</td>
<td>Conformance Class &quot;IR Req.&quot;</td>
</tr>
<tr>
<td>IR Req. 2</td>
<td>TG Req. 2</td>
<td>Conformance Class &quot;TG Req.&quot;</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>Conformance Class &quot;TG Rec.&quot;</td>
</tr>
</tbody>
</table>

Data Sets
- View Service
- Discovery Service

Metadata
- Download Service

Executable Test Suite (ETS)

Not (autom.) testable
Scope of validation and conformity testing

Legal compliance vs. Technical conformance
Focus should be on testing the Implementing Rules requirements based on technical solution(s) given by the Technical Guidance.

Different conformance classes for each testsuite to distinguish between Implementing Rules compliance and Technical Guidance conformity.

Tests (ETS) should be fully automated.

One or more commonly agreed validators for testing metadata, discovery services, view services, download services and data sets.

Process/governance of developing and maintaining tests is needed.

Development of the validator(s) should be use-case-driven.
Work-pacake and subtasks

Work Package Composition

- **WP 1: Scope, policies and procedures**
  - T1.1 Define scope of validation and testing (what should be tested, what should be tested against, what will be done with the results)
  - T1.2 Define policies and procedures of validation and conformity testing (INSPIRE testing maintenance framework), e.g. rules for developing/maintaining tests.
    - T1.2.1 Initial proposal
    - T1.2.2 Revise proposal continuously
  - T1.3 Investigate feasibility of setting up a compliance certification facility and process similar to OGC CITE or other rate system
  - T1.4 Establish INSPIRE testing maintenance framework based on results of 1.2 (e.g. operational activities)
## WP1 - Scope, policies and procedures

<table>
<thead>
<tr>
<th>No.</th>
<th>Task</th>
<th>Output</th>
<th>Start</th>
<th>End</th>
<th>Priority</th>
<th>Responsible</th>
<th>Involved</th>
<th>Status</th>
</tr>
</thead>
</table>
| 1.1 | Define scope of validation and testing (what should be tested, what should be tested against, what will be done with the results) | • Minutes of MIWP-5 workshop  
  • Terms of reference for MIWP-5 sub-group                          | 1/3/14 | 30/6/14| High     | Carlo & Daniela | all      | On-going |
| 1.2 | Define process and governance of validation and conformity testing (INSPIRE testing maintenance framework), e.g. rules for developing, endorsing and maintaining tests. | • D1.2.1 Procedures for validation and conformity testing  
  • D1.2.2 Procedures for change control of ATSs, ETSs, software, documentation etc. (as input to a larger MIG activity on procedures for change control of INSPIRE artefacts) | 17/5/14 | 31/12/15 | High     | Peter Parslow | Daniela Hogrebe, Carlo Cipolloni, JRC? |         |
| 1.2.1 | Initial proposal                                                    | D1.2.1 and D.1.2.2                                                   | 17/5/14 | 30/9/14|          |             |          |         |
| 1.2.2 | Revise proposal continuously                                         | D1.2.1 and D.1.2.2                                                   | 1/10/14 | 31/12/15|          |             |          |         |
| 1.3 | Investigate feasibility of setting up a compliance certification facility and process (for metadata, services and data) similar to OGC CITE or other rate system | • D1.3.1 Study: Overview of issues and possible benefits, existing technical solutions, possible options and policy implications | 1/10/14 | 31/12/14| Low      | ENV? Study? | MS, EC, OGC |         |
|     |                                                                     | • D1.3.2 Detailed proposal (if D1.3.1 is approved by EC & MS)          | TBD    | TBD    |          |             |          |         |
|     | Certification of software (for meeting all INSPIRE requirements)     | • Additional CITE tests for INSPIRE profile  
  • Out of scope                                                      |         |        |          |             |          |         |
| 1.4 | Establish INSPIRE testing maintenance framework based on results of 1.2 (e.g. operational activities) | • to be specified (implementation of 1.2)                            | 1/10/14 | 31/3/15| High     |             |          |         |
Work-package and subtasks

Work Package Composition

- **WP 2: Software development**
  - T2.1 Define use cases for a common validator (for metadata, data and services)
  - T2.2 Derive requirements (functional and non-functional) based on use cases
  - T2.3 Collect information on existing validation tools/platforms and approaches, including languages/approaches for documenting tests
  - T2.4 Evaluate existing tools/platforms and approaches on how they meet the requirements defined in 2.2.
  - T2.5 Derive software/test development requirements based on results of 2.4
  - T2.6 Software development (needs to be specified after 2.5), see WP 3 This could be a task on the overall architecture design.
<table>
<thead>
<tr>
<th>No.</th>
<th>Task</th>
<th>Output</th>
<th>Start</th>
<th>End</th>
<th>Priority</th>
<th>Responsible</th>
<th>Involved</th>
<th>Status</th>
</tr>
</thead>
</table>
| 2.1 | Define use cases for (a) commonly agreed validator(s) (for metadata, data and services) | Use case descriptions  
- cross-cutting use cases for validation  
- specific use cases for metadata, data and service validation | 1/3/14  | 30/09/14| High     | Giacomo Martirano, carlo Cipolloni    | Ilkka Rinne, Michael Lutz, Robert Tomas, Paul Hasenohr, NL? |        |
| 2.2 | Derive requirements (functional and non-functional) based on use cases | Specification of (functional and non-functional) requirements  
- cross-cutting requirements for validation  
- specific requirements for metadata, data and service validation | 1/10/14 | 30/11/14| High     | Giacomo Martirano, carlo Cipolloni    | Ilkka Rinne, Michael Lutz, Robert Tomas, Paul Hasenohr, NL? |        |
| 2.3 | Collect information on existing validation tools/platforms and approaches, including languages/approaches for documenting tests | Documentation on the wiki | 1/3/14  | 30/09/14| High     | Daniela Hogrebe                        | Thijs Brentjes, Angelo Quaglia                 |        |
| 2.4 | Evaluate existing tools/platforms and approaches on how they meet the requirements defined in 2.2. | Structured information (with characteristics for evaluation) on the wiki | 1/12/14 | 31/1/15 | High     | Daniela Hogrebe                        | Thijs Brentjes, Angelo Quaglia                 |        |
| 2.5 | Derive software/test development requirements based on results of 2.4 |                                                                 | 1/1/15  | 28/2/15 | High     |                                                     |                                               |        |
| 2.6 | Software development (needs to be specified after 2.5), see WP 3    |                                                                 |         |         |          |                                                     |                                               |        |
Work Package Composition

- **WP 3: Test development**
  - T3.1 Develop testsuite for INSPIRE metadata
    - T3.1.1 Analyse requirements in the MD TGs and develop ATS
    - T3.1.2 Compare existing implementations of MD IR requirements
    - T3.1.3 Develop ETS based on 3.1.1 and 3.1.2
  - T3.2 Develop testsuite for INSPIRE discovery service
    - T3.2.1 Analyse requirements in the Discovery service TGs and develop ATS
    - T3.2.2 Compare existing implementations of Discovery service IR requirements
    - T3.2.3 Develop ETS based on 3.2.1 and 3.2.2
Work Package Composition

- **WP 3: Test development**
  - T3.3 Develop testsuite for INSPIRE view service
    - T3.3.1 Analyse requirements in the View service TGs and develop ATS
    - T3.3.2 Compare existing implementations of View service IR requirements
    - T3.3.3 Develop ETS based on 3.3.1 and 3.3.2
  - T3.4 Develop testsuite for INSPIRE download service
    - T3.4.1 Analyse requirements in the Download service TGs and develop ATS
    - T3.4.2 Compare existing implementations of Download service IR requirements
    - T3.4.3 Develop ETS based on 3.4.1 and 3.4.2
  - T3.5 Investigate feasibility of testing INSPIRE data sets
    - T3.5.1 Identify feasible data set as pilots and explore ATS from TG.
    - T3.5.2 Develop ETS based on 3.5.1
<table>
<thead>
<tr>
<th>No.</th>
<th>Task</th>
<th>Output</th>
<th>Start</th>
<th>End</th>
<th>Priority</th>
<th>Responsible</th>
<th>Involved</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Develop test suite for INSPIRE metadata</td>
<td></td>
<td>1/6/14</td>
<td>??</td>
<td>High</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1.1</td>
<td>Analyse requirements in the MD TGs and develop ATS</td>
<td></td>
<td>1/6/14</td>
<td>31/8/14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1.2</td>
<td>Compare existing implementations of MD IR requirements</td>
<td></td>
<td>1/6/14</td>
<td>31/8/14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1.3</td>
<td>Develop ETS based on 3.1.1 and 3.1.2</td>
<td></td>
<td>??</td>
<td>??</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2</td>
<td>Develop test suite for INSPIRE discovery service</td>
<td></td>
<td>1/12/14</td>
<td>??</td>
<td>Low</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2.1</td>
<td>Analyse requirements in the Discovery service TGs and develop ATS</td>
<td></td>
<td>1/12/14</td>
<td>28/2/15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2.2</td>
<td>Compare existing implementations of Discovery service IR requirements</td>
<td></td>
<td>1/12/14</td>
<td>28/2/15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2.3</td>
<td>Develop ETS based on 3.2.1 and 3.2.2</td>
<td></td>
<td>??</td>
<td>??</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3</td>
<td>Develop test suite for INSPIRE view service</td>
<td></td>
<td>1/9/14</td>
<td>??</td>
<td>Medium</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3.1</td>
<td>Analyse requirements in the View service TGs and develop ATS</td>
<td></td>
<td>1/9/14</td>
<td>30/11/14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3.2</td>
<td>Compare existing implementations of View service IR requirements</td>
<td></td>
<td>1/9/14</td>
<td>30/11/14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3.3</td>
<td>Develop ETS based on 3.3.1 and 3.3.2</td>
<td></td>
<td>??</td>
<td>??</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>