INSPIRE

Infrastructure for Spatial Information in Europe

Status & future work of central INSPIRE components – For information

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actions:	MIG-T to: Take note and discuss at the 63rd MIG-T meeting.

Contents

1   Sustainability of central INSPIRE components – high-level overview

The central INSPIRE components (such as the Geoportal, Reference Validator, Re3gistry, Knowledge Base) were conceptualised and developed in slightly different contexts, using different technologies, and in different periods. While there is evidence for the usefulness of all those components by the INSPIRE community, operating and maintaining them through the current approach is not feasible from a financial and organisational point of view.

Considering this context, and in light of the new priorities defined by the Green Deal and European Strategy for Data, the JRC is working on a common approach that would ensure the sustainability of all the components in the long term. It is important to highlight that all the central components are different, and therefore no single solution is fit for all of them. However, the foreseen common approach is based, for each of the central components, on the following high-level principles:

- development of an adequate governance body comprised by MS representatives, software providers and Commission services;
- establishment of strategic partnerships with selected software projects and communities that would help ensure sustainability;
- minimisation of own developments and custom extensions in favour of increased reliance on already developed solutions;
- decoupling of the software components from the JRC ICT infrastructure and migration to a European cloud provider (e.g. Gaia-X), thus leveraging on the improved technical capabilities such as scalability and security;
- extensive use of GitHub as the platform for collection, discussion and resolution of technical issues.

The envisaged future for the tools should not in any case lead to discontinuation of the services that are being offered. A more thorough overview of the envisaged solution for each of the components together with the concrete steps to be followed is in preparation.

2   Geoportal

2.1   Current activities

The new version of the INSPIRE Geoportal including the new features for the Monitoring and Reporting (M&R) 2020 was released on the 16th of September. On the same date, a testing period started and will last until October 23. During this testing period, all interested INSPIRE stakeholders (e.g. from data providers and other implementers) can test the software, provide feedback, ask questions and report eventual bugs through the Geoportal helpdesk. The INSPIRE Geoportal team will be available to answer questions and correct the bugs reported within this period. The bugs reported after the September release will be fixed and the final version of the Geoportal used for the M&R 2020 activities, which will start on the 15th of December 2020, will be released by the 15th of November. Only bugs reported during the testing period will be fixed, while generic change proposals will not be addressed. The complete testing plan summarized above is available here.

2.2   Future activities

The improvement of the harvesting system is one of the most important activities planned for the INSPIRE Geoportal. The aim is to make the core of the Geoportal system more reliable and simpler to be managed. The main reason for starting this activity is the complexity of the current system and the difficulty to be updated and maintained.

In this context, a feasibility study on the possibility to use an open source software ([GeoNetwork](#)) has been performed at the beginning of this year. The positive outcomes of this study, supported by additional testing and communication with the GeoNetwork developers, allowed to start planning the creation of an improved Geoportal core based on the new version of GeoNetwork (currently v.4 Alpha). In particular, the use of a micro-service approach is being evaluated for the future prototype to be developed.

2.3   Simplification of data-service linking approach

Although the priority of the work on the simplification of the data-service linking approach remains high, such work had to be postponed for several reasons. The current priority of the Geoportal team is to integrate the support for MD TG 2.0 within the Geoportal system in preparation of Monitoring and Reporting 2020 (17 out of the 19 indicators will be calculated based on the information extracted by the Geoportal). Also, as explained in section 2.2, the updates and maintenance procedures on the current Geoportal system are requesting a lot of effort. Due to the complexity of the system, such procedures are often opening other issues or creating backword compatibility problems to be analysed and handled. The study and prototyping activities of a GeoNetwork-based system were exactly started to simplify the Geoportal update and maintenance process and to improve the overall user experience. From the stakeholder side, this would translate into a more responsive approach, with faster response time and faster bug fixing time. In light of this migration, it was not optimal to perform the technical work on the data-service linking simplification approach on the current Geoportal system, thus it has been postponed until the improved system will be released.

In any case, an agreement on a common simplified approach has not yet been taken. In that sense, activities to establish an agreement between the stakeholders on a common simplified approach can run in parallel with the work on the technical side. In this way, once the system will be ready, the agreed data simplification approach can be integrated without further delays.

3   Reference Validator and validation community

3.1   New software releases in preparation for Monitoring and Reporting 2020

In line with the [release plan](#), the latest version of the INSPIRE Reference Validator (v.2020.3) was released on September 16, 2020; the changelog is available [here](#). This is a bugfix version that only includes non-breaking changes compared to [v.2020.2](#) released in mid-June. In other words, all test objects which passed validation after the June release will also pass validation after this last release. In addition, v.2020.3 includes improved instructions for local deployment using Docker. According to the [release plan](#), a second version of the INSPIRE Reference Validator (v.2021.b) was also expected for mid-September, but it was not released. In addition to the content of v.2020.3, this version was expected to incorporate the breaking changes happened after the release of v.2020.2 and was aimed at anticipating the changes foreseen for 2021 so that users could have been able to start accessing and

familiarizing with them. However, v.2021.b was not released because no breaking changes to the ETS happened after the release of v.2020.2.

The version v.2020.3 of the INSPIRE Reference Validator is the one that will be used for Monitoring and Reporting 2020 to calculate indicators MDi1.1 and MDi1.2, which correspond to the percentage of conformant metadata for spatial data sets (including data set series) and spatial data services, respectively. Such indicators will be computed after validating the metadata (harvested from Member States national catalogues) against the following conformance classes for MD TG 2.0 (for the meaning of the IDs please check the production instance of the INSPIRE Reference Validator):

- spatial data sets: Conformance Class 2b (which depends on Conformance Classes 'Common Requirements' and 1)
- spatial data services:
  - for network services, Conformance Class 4 (which depends on Conformance Classes 'Common Requirements' and 3)
  - for invocable spatial data services, Conformance Class 5 (which depends on Conformance Classes 'Common Requirements' and 3)

In Monitoring and Reporting 2020 no metadata will be validated against the conformance classes for MD TG 1.3, since the transition period to update to TG 2.0 ended in December 2019.

The release of v.2020.3 of the INSPIRE Reference Validator was complemented by the release of v.2020.2.0 of the bulk validation tool for metadata. This software allows to validate a large number of metadata using the API of any instance of the INSPIRE Reference Validator; it returns a set of output files which not only allow to calculate indicators MDi1.1 and MDi1.2, but also to detect which tests are failing in which metadata record, thus facilitating the fixing of errors. For all these reasons, the bulk validation tool for metadata is highly recommended (in conjunction with a local instance of the INSPIRE Reference Validator) in preparation for Monitoring and Reporting 2020. The new release updates the first one (v.2020.1.0) by forcing validation against the conformance classes for MD TG 2.0 used for Monitoring and Reporting 2020.

In addition, a new release of the ETF Testing Framework is currently in preparation and is foreseen for October 2020. The ETF Testing Framework is the open source geospatial validation engine powering - among others - the INSPIRE Reference Validator. Information on the improvement proposals currently under discussion by the Steering Group (where JRC is also represented) and those accepted for the next release are available in this project board.

3.2   New ATS/ETS for Annex II/III data specifications

Development of Abstract and Executable Test Suites (ATS and ETS) for INSPIRE data themes belonging to Annex II and Annex III is ongoing. The order in which ATS and ETS are developed was established according to the 'popularity' of each theme, measured based on the number of data sets and priority data sets corresponding to each theme available in the INSPIRE Geoportal in May 2020. Currently, ATS and ETS are available for Area management/restriction/regulation zones & reporting units (AM), Land use (LU), Natural risk zones (NZ), Environmental monitoring facilities (EF), and Species distribution (SD); development is currently ongoing for Buildings (BU). The list of available ATS and ETS, together with the link to the corresponding code, is available and kept up to date in this GitHub issue. All the tests are initially made available in the staging instance of the INSPIRE Reference Validator for testing by the

community; once consolidated, they are also included in the production instance. Therefore, we recommend that national data providers are informed about these new developments so that they can test their data sets and provide feedback.

ATS and ETS for the remaining data themes will be developed over the next months. Please note that these new tests only reflect the theme-specific requirements listed in the Data Specifications; any GML data set can already be tested against the common conformance classes for GML data sets, which in the production instance of the INSPIRE Reference Validator are listed in the section named 'Interoperable data sets in GML'.

3.3   New User Interface of the INSPIRE Reference Validator

As already announced during the INSPIRE Reference Validator session within the INSPIRE Conference 2020, a new User Interface (UI) of the INSPIRE Reference Validator is under development. The new UI will feature two main changes compared to the current one: (i) it will reflect the visual identity of the European Commission; and (ii) it will simplify the way users search and select the conformance class(es) they want to test. In particular, users will have to first choose the resource they would like to test (i.e. metadata, view service, download service, discovery service, or data set) and then specify the type of resource – for example, for view service, specify whether a WMS or WMTS is being tested (see Figure 1). The corresponding conformance classes will be automatically selected, without the need for the users to manually select each of them (as it happens with the current version). Using the 'Advanced options' button, more experienced users will still be able to access the conformance classes selected and turn them on/off (see Figure 1). The visualization of the page listing all the test reports will be also improved, with multiple options to filter test reports based on resource type and status, in addition to a text-based search (see Figure 2). The new UI will still use the same API of the INSPIRE Reference Validator, which means that the testing engine (and the tests themselves) will be the same and only the interface will change.

The new UI will be released before the MIG-T meeting, initially as a working prototype available in addition to the current production instance. The INSPIRE validation community will be invited to test it and provide feedback in the Validator helpdesk so that the prototype can be improved. Afterwards, the current UI will be dismissed, and the new UI will be used in both the production and staging instances.

Figure 1. Test selection page of the new INSPIRE Reference Validator UI.

Figure 2. Test results page of the new INSPIRE Reference Validator UI.

3.4 Network of national validation contact points

After closing the Action 2017.4 on validation and conformity testing, a network formed by national validation contact points was created. The activities were formally started with a virtual kick-off meeting held on July 15, 2020. 14 Member States nominated at least one expert to join this network,

which currently counts a total of 21 experts in addition to the JRC staff. The network should support the evolution and maintenance of the INSPIRE validation framework; in this regard, experts belonging to the network are recommended to:

- monitor the INSPIRE validation community space to be informed on the latest news, and pass such information to national data providers;
- provide expert advice in the discussions happening in the helpdesk and feedback on the new developments (new releases, documents, etc.);
- monitor new developments in the INSPIRE Reference Validator (e.g. new ATS/ETS for Annex III/III data specifications) and inform their national stakeholders accordingly;
- inform the network on plans to setup a national instance of the INSPIRE Reference Validator;
- promote funding or contribution at the national level to support the INSPIRE Reference Validator and advise on strategies for the sustainability of the Validator.

In contrast to the previous MIWP Action, the activities of the network are flexible and not bounded to a specific timeframe and objectives. A dedicated mailing list was created to facilitate discussions between the experts belonging to the network. Despite this, during the first few months the input received from the experts has been limited and all the requests from the JRC staff (e.g. provision of feedback on specific discussions in the helpdesk) have been only satisfied by few of the experts.

4 Re3gistry and register federation

4.1 Re3gistry 2 release

The Re3gistry 2 software was released on the 20th of July. This new version greatly improves the former Re3gistry 1.3 software including many features, as suggested by the user community, such as:

- User friendly editing interface
- Built-in ISO19135 Reference codes management workflow
- Bulk import
- Improved JSON and ISO19135 formats
- Ready to use & customisable public user interface (web application)
- Installation wizard including migration from Re3gistry 1.3
- RESTful API
- New User, Administrator and Developer guides

The software, which was already released under the EUPL licence, has been officially published as an open source project on the GitHub platform with the aim to foster the creation of a community helping to improve and maintain it.

The development of the Re3gistry 2 was funded by the ISA² Programme through the ELISE Action; the software was developed in cooperation with the National Land Survey of Finland. The code and all the information about the Re3gistry 2 release can be found in GitHub at https://github.com/ec-jrc/re3gistry. The Re3gistry 2 GitHub space can also be used to make suggestions, fix bugs, improve documentation, or contribute to the code. More details can be found at the Re3gistry's Joinup page.

4.2   Re3gistry on OSGeoLive

OSGeoLive is an educational project of the Open Source Geospatial Foundation (OSGeo) and consists of a Linux-based distribution (available as a DVD, bootable USB drive or virtual machine) including tens of open source geospatial software projects already installed and ready to use. It offers a great way to familiarize with new software tools without the need of installing and configuring them. The next version of the OSGeo Live (14.0), foreseen for late 2020, will include the Registry 2, thus allowing to play with the new software without the need to install it from scratch. The upcoming OSGeoLive distribution will also feature an overview of the Registry 2 and a quickstart guide to get familiar with the software. The INSPIRE documentation available in the OSGeoLive (currently here for version 13.0) has been also revised and extended for the upcoming version 14.0.

4.3   Register Federation

The INSPIRE Register Federation testbed is ongoing. Currently there are 10 registers federated in the system coming from different stakeholders in the INSPIRE context. The plan is to move the system from the current testbed to an operational service in order to allow more registers to be federated, thus promoting the use of the federation to share reference codes in the context of INSPIRE.

5   Migration of INSPIRE schemas to HTTP

All the resources available under the INSPIRE domain (inspire.ec.europa.eu) were recently moved under a reverse proxy that redirects them from HTTP to HTTPS. The only (temporary) exception to this migration is represented by INSPIRE schemas, because many INSPIRE software products are not able to handle the HTTP/HTTPS redirection and would not be able to reach the schemas after a migration.

Therefore, a plan was designed to allow a smooth transition towards the use of the HTTPS migrated schemas. A copy of the schema repositories (including imported schemas) was created under HTTPS; next step is to inform the community to use the new HTTPS schemas but keep also the available HTTP schemas for a short transition period until February 2021, before discontinuing them. At that point, the final behaviour of the system will be to redirect all the calls from HTTP to HTTPS. The schemas redirection can already be tested as explained in point 3 below.

In summary, there are currently 3 available ways to access the schemas:

1. Call to HTTP protocol: http://inspire.ec.europa.eu/schemas - In this case the call using the HTTP protocol, will not be redirected to HTTPS – The reference inside the XML will use HTTP URLs.
2. Call to HTTPS protocol: https://inspire.ec.europa.eu/schemas - In this case the call using the HTTPS protocol, will not have any redirection – The reference inside the XML will use HTTPS URLs.
3. Call to HTTP protocol: http://inspire.ec.europa.eu/schemas-test-redirect - In this case the call using the HTTP protocol will always be redirected to HTTPS – The reference inside the XML will use HTTPS URLs.