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INSPIRE Community Forum on Software & Tools and Elevation, Orthoimagery, Reference systems & Geographical grids Phase 2 - 2020 activity report (Deliverable – D2)

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1. STATE OF PLAY IN THE THEMATIC DOMAIN

This chapter provides an insight about the projects, activities, applications, tools, discussions topics, INSPIRE data and services and experiences shared throughout the *Software & Tools* and the *Elevation, Orthoimagery, Reference systems and Geographical grids* group discussion of the INSPIRE Community Forum.

A selection of these contents and materials are provided below with the aim to give a brushstroke about the stay of play in both forums.

1.1. *Software & Tools* forum

In 2019-2020 most of the contents and discussions in this forum of the INSPIRE Community Forum are focused on different specific software tools that may be utilised in different steps of the INSPIRE implementation, mainly about generation and maintenance of metadata in conformance to the INSPIRE, transformation of data according the INSPIRE data models, schemas or alternative encodings, publication of data through INSPIRE services, validation of INSPIRE metadata, data and services.

In the future it is expected to broaden these materials with other topics such as as-Is data exploration, identification of your scope within INSPIRE, or usage of INSPIRE / interoperable data.

The following sections provides a selection of materials and topics that have been published in the forum during the period of Phase 1 already accomplished.

1.1.1. Relevant Initiatives, Technology and Software Inventories

This section provides an overview of relevant initiatives, technology and software inventories which may help in discovering an identifying applications, tools and apps that may applicable in the implementation, exploitation and use of INSPIRE.

During 2019-2020 the efforts have been focused on documenting special pages providing access to the inventories that has been identified at this initial stage. The main inventory identified in the period is described below:

- **INSPIRE in Practice (Tools & Apps)**:

  The INSPIRE in Practice is a collaborative platform brings together in a single place the different players involved in INSPIRE to facilitate the exchange of practical knowledge while leveraging synergies amongst stakeholders. More specifically, it aims to support the sharing of experience and expertise between INSPIRE implementers, software solution providers and end-user application developers. The platform helps to showcase each stakeholder's piece of knowledge, through contributions related to either annotated experiences of implementing INSPIRE or by registering tools or SDI-powered apps in the platform.

  This website is the result of the development of the prototype ARE3NA Re3ference Platform. It is helping to enable location interoperability across Europe as one of the goals of the Interoperability Solutions for European Public Administrations (ISA^2) Programme.

  This nice inventory of applications, tools and apps may be accessed through the *INSPIRE in Practice - Tools & Apps* special page, under section *SW & Tools for INSPIRE*.

Other central INSPIRE technical components have been described in dedicated special pages – See information in Section 2.1.3.2 of this report.

1.1.2. Selected / Most-Active Forum Contributions

A list of selected, relevant discussion topics is provided below:

- **ISO AP 1.0.0 schemalocation to ISO website not available** (8 replies)

  https://inspire.ec.europa.eu/forum/discussion/view/264812/iso-ap-100-schemalocation-to-iso-website-not-available

  This discussion topic was open to warn about the situation that the ISO 19139 gmd.xsd schema, being referenced from the "csw/2.0.2/profiles/apiso/1.0.0/apiso.xsd" schema published in the opengis.net website (http://schemas.opengis.net), was not available any more in the ISO website (http://standards.iso.org).

  This situation was causing problems in some tools, particularly when validating metadata in some editor tools.

  As a result of the discussion in the thread it was put into knowledge of the community that the JRC is taking action with ISO in order to address this issue.

  In the meantime, some alternative URLs to access the apiso.xsd schema has been identified.

- **GeoNetwork 3.4 and THREDDS/ERDDAP server** (7 replies)

  https://inspire.ec.europa.eu/forum/discussion/view/241977/geonetwork-34-and-threddserddap-server

  This discussion topic was open to ask first about available technical solutions for harvesting data from an ERDDAP metadata server into a GeoNetwork catalogue, to be used for storing and providing binary format datasets (e.g. NetCDF).

  ERDDAP (as well as THREDDS) servers make uses of metadata according an ISO 19115-2 schema (gmi:MI_Metadata), which is not recognized by GeoNetwork. Hence, second question was if any GeoNetwork plug-in exists to read such metadata format or the only solution was to convert it into ISO 19139 metadata (gmd:MD_Metadata).

  The discussion clarified that ISO 19115-2 schemas are not adopted by INSPIRE, and that the most feasible approach was installing a GeoNetwork plug-in based on the ISO 19115-3 schemas, which avoids loss of information and prevents having to map ISO 19115-2 metadata to ISO 19139 metadata (gmi2gmd schema conversion).

- **Abnormal behaviour of GeoNetwork metadata editor when processing the 'operatesOn' metadata field** (5 replies)

  https://inspire.ec.europa.eu/forum/discussion/view/263413/abnormal-behavior-of-geonetwork-metadata-editor-when-processing-the-operateson-metadata-field

  This discussion topic was open to alert about a possible bug of the GeoNetwork opensource metadata catalogue and editor application. When service metadata files containing the data-service linking *srv:operatesOn* field are imported into the catalogue, and they are open afterwards in the editor, the content of this metadata field disappears.

  The discussion brought that this bug was probably solved in the last versions of the GeoNetwork metadata catalogue, something to be further investigated.

- **Semi-automatic transformation mapping from TG MD 1.3 to TG 2.0** (3 replies)

  https://inspire.ec.europa.eu/forum/discussion/view/264985/semi-automatic-transformation-mapping-from-tg-md-13-to-tg-20

  This discussion topic was open for requesting about some existing experiences of machine processable implementations for mapping the requirements in previous versions of the technical guidelines on metadata to its new version 2.0.

  As a result, an example XSLT transformation has been shared by the European Environment Agency (EEA) and the existence of a metadata converter (RNDT metadata converter) from the Agenzia per l'Italia Digitale has been identified.

- **Implementation Spatial Scope/Priority Datasets code lists in GeoNetwork** (3 replies)

  https://inspire.ec.europa.eu/forum/discussion/view/261239/implementation-spatial-scopepriority-datasets-codelists-in-geonetwork

  This thread was open to ask for help about some issues encountered during the implementation of the spatial scope / priority datasets code lists metadata tagging using GeoNetwork v3.6.0. After useful inputs from members of the forum, the issues were properly resolved.

1.1.3. Relevant Existing Applications and Services

One of the expected objectives of this forum is to help in identifying relevant and useful software applications that may help in the different processes to implement, exploit and use INSPIRE.

Most efforts have been focused on documenting special pages about central software components which play a crucial role in INSPIRE: e.g. the INSPIRE Reference Validator, the INSPIRE Registry, and the resources uploaded to the INSPIRE-JRC GitHub repositories.

Apart of this central INSPIRE technical components, another special page has been published with the aim of providing access to other applications available in the market. This is the *INSPIRE in Practice - Tools & Apps* special page, which at the moment is pointing at the resources currently available in the INSPIRE in Practice platform.

During the rest of 2020, it would be desirable to identify and document other applications and software tools available in the market. For those software applications showing general interest, new dedicated pages will be created in order to help implementers in getting to know their capabilities, benefits and drawbacks.

Another of the expected objectives of this forum is to point users to existing experiences and examples of INSPIRE Data and Services. The *INSPIRE Data & Services examples* special page has been created in purpose, but gathering an initial relevant collection of implementation examples is a long-effort task which needs sharing of examples from Member States. At the moment, those resources from the INSPIRE Community Forum which are tagged as good practices ('*TC-Good-practice*'), reference implementations ('*TC-Reference-implementation*') or implementation examples ('*TC-Implementation-example*') are referenced from this special page.

Find more information in Section 2.1.3.2 about the special pages documented.

1.2. *Elevation, Orthoimagery, Reference systems & Geographical grids* forum

In the period 2019-2020 the sharing of discussion topics, activities and implementation examples on INSPIRE coverage data and services has continued through the platform.

Additionally, other communities like UN-GGIM Europe and EMODnet Bathymetry has been reached in this phase and different materials on these areas have started to flourish in the forum.

The following sections provides a selection of materials and topics that have been published in the forum during the period of Phase 1 already accomplished.

1.2.1. Relevant EU Projects, Technology and Software Activities

This section provides an overview of relevant European projects, forum activities, underlying technologies and/or software tools that may aid in the implementation of the themes in the scope of this forum.

A list of selected, relevant pages dedicated to such aspects is provided below:

- **UN-GGIM: Europe Working Group on Core Data**.

  https://inspire.ec.europa.eu/forum/pages/view/259194/un-ggim-europe-working-group-on-core-data

  UN-GGIM (United Nations initiative on Global Geographic Information Management) was launched by the Statistical Division of the United Nations in 2011. This was the starting point for several activities at global and regional levels. Among them, UN-GGIM: Europe decided to create a Working Group on core data (WG A).

  Core Data has been defined as the geospatial data the most useful to analyse, achieve or monitor the Sustainable Development Goals (SDGs), either directly or indirectly. Main purpose of the working group on core data is to define priorities for production of new data or enhancement of existing ones.

  In a starting phase, WG A selected 14 core themes among the 34 INSPIRE themes. In a second phase, WG A is elaborating "Recommendations for content" for the selected themes.

  These recommendations for content are based both on user requirements (with focus on SDG related use cases) and on existing standards, mainly the INSPIRE Data Specifications. Core data recommendations for content include a list of expected feature types and attributes, selection of relevant levels of detail and a few key quality requirements.

  In practice, INSPIRE supplies common terminology and a list of candidate feature types and attributes. Core content is generally a selection of the INSPIRE key concepts but some extensions or modifications may also occur, if this is considered necessary.

  In 2019, UN-GGIM: Europe has shared through the in the INSPIRE Community Forum the documents concerned to the "Recommendations for content" for the core themes Orthoimagery and Elevation, additionally requesting the members of the forum for providing comments to these deliverables in due date.

- **EMODnet Bathymetry community**.

  https://inspire.ec.europa.eu/forum/pages/view/263017/emodnet-bathymetry

  The EMODnet Bathymetry portal is the result of a European long-effort project which started in June 2009 with the aim of providing interoperable access to European bathymetry data sets. It is operated and further developed by a European partnership. This comprises members of the SeaDataNet consortium together with organisations from

marine science, the hydrographic survey community, and industry. The partners combine expertise and experiences of collecting, processing, and managing of bathymetric data together with expertise in distributed data infrastructure development and operation and providing OGC services (WMS, WFS, and WCS) for viewing and distribution.

SeaDataNet is a leading infrastructure in Europe for marine & ocean data management, initiated and managed by the National Oceanographic Data Centres (NODC's). It is actively operating and further developing a Pan-European infrastructure for managing, indexing and providing access to ocean and marine data sets and data products, acquired via research cruises and other in-situ observational activities. SeaDataNet aims for an extensive coverage of available data sets for the various marine environmental disciplines.

At the end of December 2016, the EMODnet Bathymetry project was succeeded by the EMODnet High Resolution Seabed Mapping Project (HRSM) as part of the third phase of the project.

This new project continues to collect bathymetric data with an extra focus on European coastal waters. In addition, satellite derived bathymetric data is included to experiment with empty areas. This data provides input for producing a DTM with a resolution of 1/16 arc minutes (approximately 115 m).

Furthermore, local DTMs with higher resolutions are produced, where the level data and data suppliers allow this goal. The higher resolution DTMs are used to determine the best estimate of the European coastline for a range of tide levels (HAT, MHW, MSL, Chart datum, LAT).

EMODnet is mainly interested in assuring INSPIRE compliance for the EMODnet HRSM CDI files, which is one of the most important challenges for your community. For this reason, discussion topics about the convenience of aligning EMODnet and INSPIRE (i.e. EMODnet projects being based on on-line up-to-date available INSPIRE web services) are expected in the near future in the INSPIRE Community Forum.

- **Workshop "Feel the power of INSPIRE WCS / WCPS in your hands"** – INSPIRE Helsinki 2019.

  https://inspire.ec.europa.eu/forum/pages/view/262985/workshop-%E2%80%9Cfeel-the-power-of-inspire-wcs-wcps-in-your-hands%E2%80%9D

  Section 2.2 of this report explains the objectives and results of this forum activity.

- **Good practice for the provision of interoperable INSPIRE Coverage data and services**.

  https://inspire.ec.europa.eu/forum/pages/view/265454/an-effective-good-practice-to-boost-interoperable-provision-of-raster-inspire-coverage-data-and-services

  A dedicated page has been published describing the results of the *Workshop "Feel the power of INSPIRE WCS / WCPS in your hands"* hold in the INSPIRE Helsinki 2019 technical event.

  It counts with a demonstration WCS service offering INSPIRE-like raster sample data for several themes (Elevation, Orthoimagery, Land cover) based on a set of proposed INSPIRE XSD schemas which solves the main issues identified for INSPIRE coverage data till the date.

  The page links to a new website which offers the possibility to make sample request to the service. It also helps to show the power of WCS/WCPS raster data analytics and the benefits could deliver for INSPIRE- See the website: *INSPIRE Coverages demystified*

- **MIG-2016.4 - Change proposals for MIG-T**.

  https://inspire.ec.europa.eu/forum/pages/view/37708/mig-20164-change-proposals-for-mig-t

  This page provides access to all proposals for change that have been gathered through the INSPIRE Community Forum (named INSPIRE Thematic Clusters platform before) till the date.

1.2.2. Selected / Most-Active Forum Contributions

A list of selected, relevant discussion topics is provided below:

- **Which is the correct encoding of gml:sequenceRule axisOrder & gml:axisLabels for GeoTIFF in EPSG 3035 delivered through WCS?** (17 replies)

  https://inspire.ec.europa.eu/forum/discussion/view/202766/which-is-the-correct-encoding-of-gmlsequencerule-axisorder-gmlaxislabels-for-geotiff-in-epsg-3035-delivered-trough-wcs

  This discussion topic was started to post a question about the axis order to be used within an INSPIRE compliant Elevation coverage, once having found different approaches in existing documentation and threads from various sources. Particularly, the question was how the elements *gml:domainSet* and *gml:coverageFunction* should be correctly encoded for a GeoTIFF file provided via WCS using EPSG 3035 as Coordinate reference system.

  The discussion brought to the table that there are differences on how CIS1.0 (implementation standard selected by INSPIRE) and CIS1.1 (new version of the OGC standard) define the axis order for coverages. Additionally, there is room for improving the coverage encoding example included as part of the current version of the Elevation data specifications.

- **Which are the issues on inspire compliance of EMODNET bathymetry CDIs?** (7 replies)

  https://inspire.ec.europa.eu/forum/discussion/view/264053/which-are-the-issues-on-inspire-compliance-of-emodnet-bathymetry-cdis

  This discussion topic was open in order to establish synergies between the provision of EMODNET bathymetry data already, which effectively provides interoperable data between bathymetry stakeholders in Europe, and the need to deliver this kind of data in the scope of the INSPIRE Directive.

  The aim is to minimise the efforts to be devoted to the transformation of EMODNET bathymetry data for the purpose of INSPIRE, by identifying the main issues and barriers the members of this community may find during the process.

  As a result of this engagement, a presentation for the next INSPIRE Conference 2020 in Dubrovnik has been appointed.

- **Is it necessary to set up services for the Coordinate Reference Systems (RS) and the Geographical Grid Systems (GG) data themes?** (7 replies)

  https://inspire.ec.europa.eu/forum/discussion/view/261694/is-it-necessary-to-set-up-services-for-the-coordinate-reference-systems-rs-and-the-geographical-grid-systems-gg-data-themes

  This topic discusses about the suitability / need for Member States to provide data and services on the Coordinate Reference Systems and the Geographical Grid Systems INSPIRE

themes, which may facilitate the work of public and private data producers at least at national level.

A totally similar topic was brought to and discussed in the 29th Meeting of the INSPIRE MIG-T (Ispra, 19th-20th April 2016) in a "*Question & Answer about CRS & GGS*" short session. The conclusion was that the INSPIRE RS and GG Technical Guidelines only establish requirements and recommendations related to the provision / organization of INSPIRE data sets from other INSPIRE (data) themes. In other words, RS and GG themes govern the rules for providing, accessing and visualizing data sets in the scope of INSPIRE, but they do not mandate the provision of themes-specific data themselves.

At the moment, there is no official answer to this question.

- **Which ISO 19115 metadata attribute should hold the CV_InterpolationMethod information?** (5 replies)

  https://inspire.ec.europa.eu/forum/discussion/view/241592/which-iso-19115-metadata-attribute-should-hold-the-cv-interpolationmehod-information

  This discussion topic was posted to ask a question on how to provide metadata information concerning to the recommended interpolation method to be used to exploit the raster data included in an Elevation grid coverage. The current version of the data specifications proposes to use a metadata structure according ISO 19115 as part of the additional information included in the metadata hook of the coverage, foreseen by OGC. The question was particularly focused on which metadata element within this ISO 19115 structure should be used to inform about the recommended interpolation method.

  During the post it was clarified that this information may be provided in the "*supplementalInformation*" metadata element from ISO 19115.

- **Availability of Elevation data in the inspire thematic viewer** (0 replies – Recent topic)

  https://inspire.ec.europa.eu/forum/discussion/view/265361/availability-of-elevation-data-in-the-inspire-thematic-viewer

  This discussion topic has been opened to share views with the community on the current availability of Elevation data for achieving the purpose of INSPIRE.

  It describes the revision and assessment - included in Section 1.2.4 of this report - on the Elevation data sets offered through the INSPIRE Thematic Viewer (INSPIRE Geoportal) during the period 2018 - 2020.

  The objective of the discussion is to help in identifying existing barriers to achieves the goal of providing conformant data for the INSPIRE Directive by the deadline in October 2020.

- **Availability of Orthoimagery data in the inspire thematic viewer** (0 replies – Recent topic)

  https://inspire.ec.europa.eu/forum/discussion/view/265370/availability-of-orthoimagery-data-in-the-inspire-thematic-viewer

  This discussion topic is totally similar to the previous one, in this case focused on the Orthoimagery theme.

1.2.3. Relevant Existing Applications and Services

This section highlights a selection of relevant software applications and services identified as part of the activity of the forum:

- Implementation experiences documented in the forum till the date.

https://inspire.ec.europa.eu/forum/pages/view/48834/implementation-experiences-elevation-orthoimagery

This page provides access to the implementation experiences that have been documented through the INSPIRE Community Forum (and its ancestor, the INSPIRE Thematic Clusters platform) till the date.

- Examples of INSPIRE services and coverage metadata files presented in the Workshop "Feel the power of INSPIRE WCS / WCPS in your hands" – INSPIRE Helsinki 2019.

  https://inspire.ec.europa.eu/forum/pages/view/262985/workshop-%E2%80%9Cfeel-the-power-of-inspire-wcs-wcps-in-your-hands%E2%80%9D

  Visit this page to access the INSPIRE services and coverage metadata files presented during this activity in the INSPIRE Helsinki 2019 Technical Conference.

  Just remark the existence of the following proposals of amended INSPIRE Coverage (metadata) schemas:

  - Orthoimagery: https://schema.datacove.eu/OrthoimageryMetadata.xsd
  - Elevation: https://schema.datacove.eu/ElevationGridCoverageMetadata.xsd
  - Land cover: http://test.datacove.eu/LandCoverRasterMDExt.xsd

  Additionally, remark the existence of INSPIRE Coverage data uploaded and ready in this testing rasdaman software engine: http://ows.rasdaman.org/rasdaman/ows

  Section 2.2 provides more details on this workshop activity.

- INSPIRE WCS demonstration service already reported in Section 1.2.1.

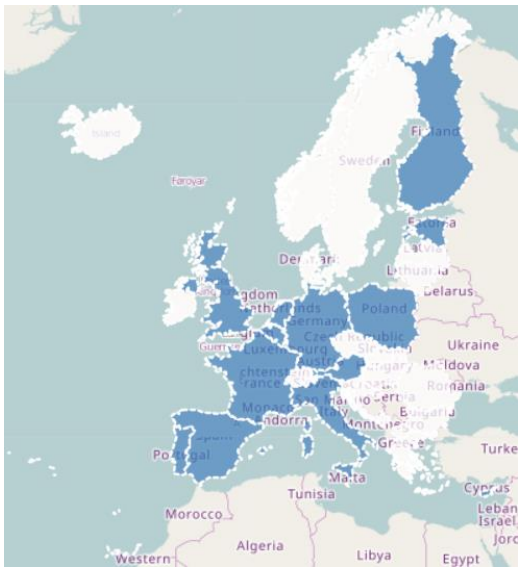
1.2.4. Availability of thematic domain data sets in the European Geoportal

This section provides an overview assessment of the availability of thematic domain data sets in the European Geoportal, including a number of conclusions.

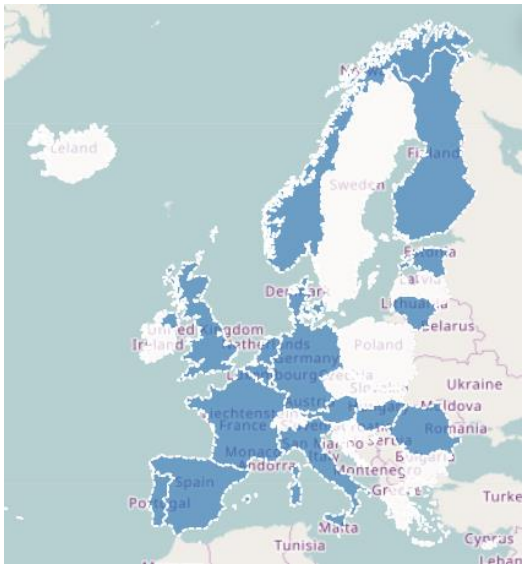
1.2.4.1. Assessment

On 15th April 2020 the INSPIRE Thematic Viewer counts with:

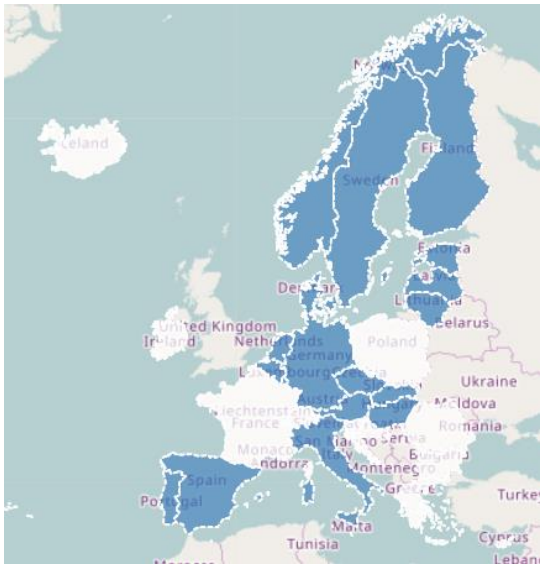
- **3799 metadata records** related to **Elevation** resources (4646 on 20th November 2019; 3874 on 22nd June 2018):
  - **115 of them being viewable data sets** from countries (37 of them having National coverage, belonging to 14 out of 31 countries) – Provided by Austria (14), Belgium (9), Czech Republic (2), Denmark (1), Estonia (2), Finland (1), Germany (24), Hungary (1), Iceland (1), Italy (24), Latvia (1), Liechtenstein (1), Lithuania (1), Luxembourg (4), Malta (3), the Netherlands (5), Norway (7), Portugal (7), Slovakia (1), Spain (5) and Sweden (1).
  - Czech Republic, Iceland, Latvia, Slovakia and Sweden started to provide viewable data sets in the period from 20th November 2019 to 15th April 2020.
  - France and Romania lost their viewable data sets in the period from 20th November 2019 to 15th April 2020. The UK left the European Union.



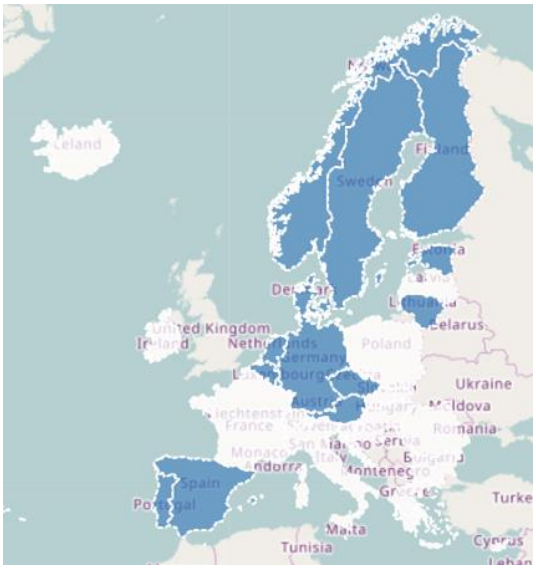
3874 EL data sets
22nd June 2018



273 viewable / 4646 EL data sets
20th November 2019



115 viewable / 3799 EL data sets
15th April 2020



37 viewable National coverage / 3799 EL data sets
15th April 2020

- **79 of them being downloadable data sets** from countries (22 of them having National coverage, belonging to 8 out of 31 countries) - Provided by Austria (10), Belgium (6), Finland (1), Germany (7), Hungary (1), Italy (24), Latvia (1), Lithuania (1), Luxembourg (6), Malta (1), the Netherlands (1), Norway (13) and Portugal (6).
- Italy and Latvia started to provide downloadable data sets in the period from 20th November 2019 to 15th April 2020.
- France, Iceland, Romania and Spain lost their downloadable data sets in the period from 20th November 2019 to 15th April 2020.

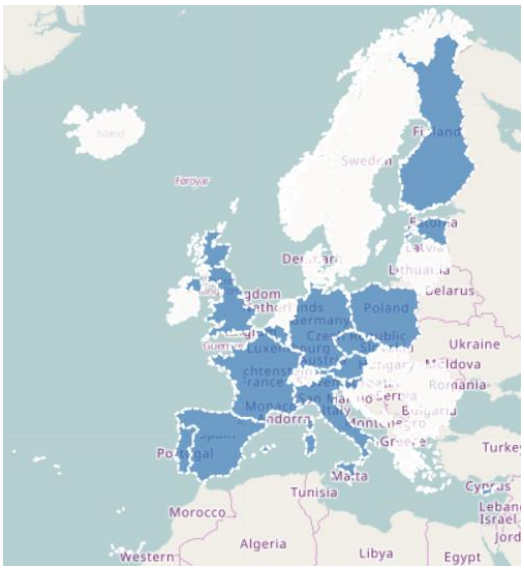
33 downloadable / 3874 EL data sets
22nd June 2018

113 downloadable / 4646 EL data sets
20th November 2019

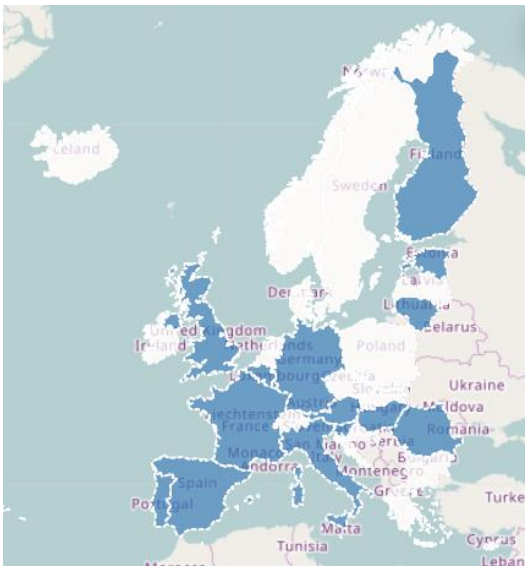
79 downloadable / 3799 EL data sets
15th April 2020

22 downloadable National coverage / 3799 EL data sets
15th April 2020

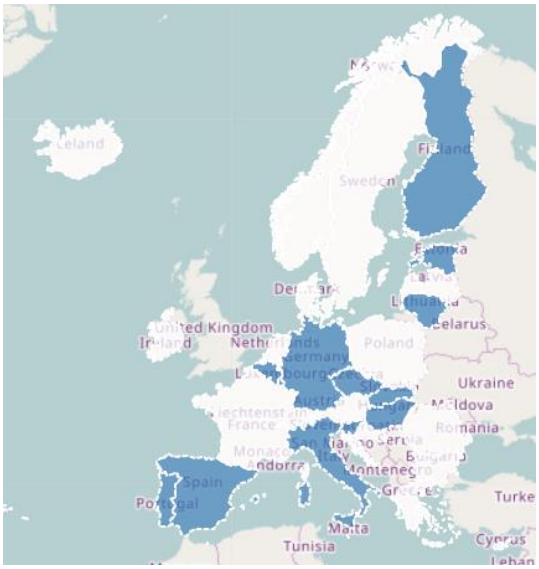
- **1201 metadata records** related to **Orthoimagery** resources (2211 on 20th November 2019; 865 on 22nd June 2018):
  - **96 of them being viewable data sets** from countries (25 of them having National coverage, belonging to 9 out of 31 countries) - Provided by Belgium (27), Czech Republic (1), Estonia (1), Finland (3), Germany (25), Hungary (7), Italy (5), Liechtenstein (2), Lithuania (1), Luxembourg (10), Malta (1), Portugal (8), Slovakia (1), Slovenia (1) and Spain (2).
  - Czech Republic and Slovakia started to provide viewable data sets in the period from 20th November 2019 to 15th April 2020.
  - Austria, France and Romania lost their viewable data sets in the period from 20th November 2019 to 15th April 2020. The UK left the European Union.



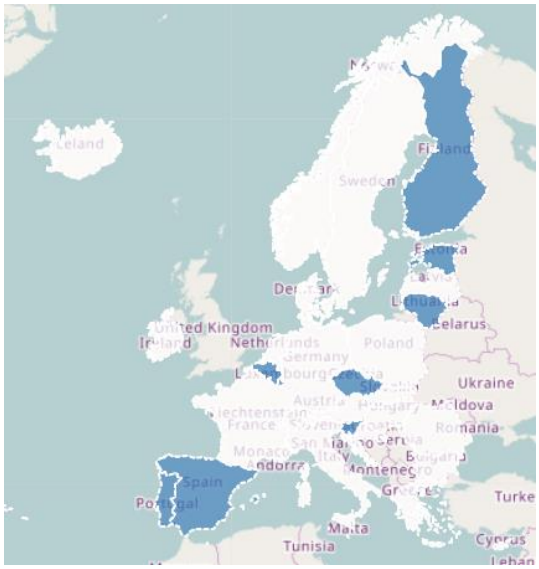
865 OI data sets
22nd June 2018



190 viewable / 2211 OI data sets
20th November 2019



96 viewable / 1201 OI data sets
15th April 2020



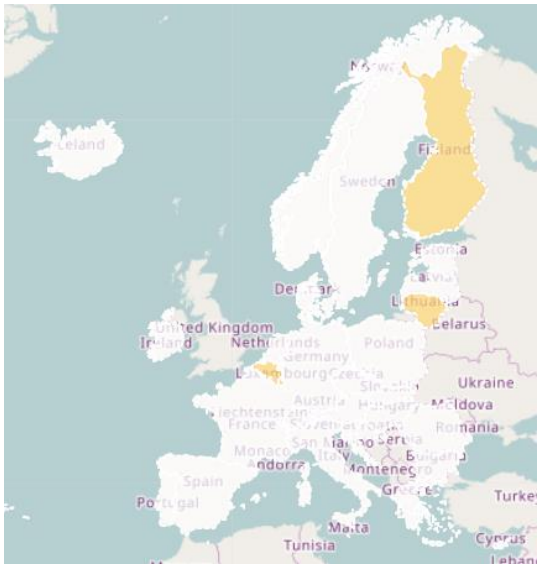
25 viewable National coverage / 1201 OI data sets
15th April 2020

- **47 of them being downloadable data sets** from countries (16 of them having National coverage, belonging to 4 out of 31 countries) - Provided by Belgium (22), Finland (3), Germany (3), Hungary (7), Lithuania (1) and Luxembourg (11).
- No new countries started to provide downloadable data sets in the period from 20th November 2019 to 15th April 2020.
- France and Romania lost their downloadable data sets in the period from 20th November 2019 to 15th April 2020.

41 downloadable / 865 OI data sets
22nd June 2018

93 downloadable / 2211 OI data sets
20th November 2019

47 downloadable / 1201 OI data sets
15th April 2020



16 downloadable National coverage / 1201 OI data sets
15th April 2020

1.2.4.2. Conclusions

Elevation

The assessment is also published online in the INSPIRE Community Forum with the aim of collecting new views, real direct experiences and examples showing the main drawbacks hindering interoperability of European Elevation data.

https://inspire.ec.europa.eu/forum/discussion/view/265361/availability-of-elevation-data-in-the-inspire-thematic-viewer

The main basic conclusions derived from these statistics are enumerated below:

- Elevation data sets reported remained quite stable in the period from 22nd June 2018 to 15th April 2020, with a slight decrease of 1.9% (from 3874 to 3799).

  It could be produced by refinements of the criteria used to select Elevation data sets to be reported.

- Reporting of Elevation viewable data sets has been importantly reduced, decreasing in a 57.9% from 20th November 2019 to 15th April 2020 (from 273 to 115).

  This could be caused by that the situation that reporting of viewable data sets is progressively focusing on INSPIREd Elevation data sets, rather than other Elevation data sets not transformed according the Directive.

- Reporting of Elevation downloadable data sets has experimented a relevant increase of 139.4% from 22nd June 2018 to 15th April 2020 (from 33 to 79).

  This seems encouraging taking into account that the deadline for providing conformant download services is October 2020.

  However, the most interesting indicator here would be the conformance of such downloadable data sets according the Directive. Hopefully available in short.

- Only 14 out of 31 countries seems to have National coverage of viewable INSPIRE Elevation data sets, which represents a 45.2% of all of them.

- Only 8 out of 31 countries seems to have National coverage of downloadable INSPIRE Elevation data sets, which represents only a 25.8% of all of them.

- At the moment, there is no information about the difference in availability of land-elevation and bathymetry data.

Orthoimagery

The assessment is also published online in the INSPIRE Community Forum with the aim of collecting new views, real direct experiences and examples showing the main drawbacks hindering interoperability of European Orthoimagery data.

https://inspire.ec.europa.eu/forum/discussion/view/265370/availability-of-orthoimagery-data-in-the-inspire-thematic-viewer

The main basic conclusions derived from these statistics are enumerated below:

- Orthoimagery data sets reported increased in the period from 22nd June 2018 to 15th April 2020 in a 38.8% (from 865 to 1201).

  This indicates an evolution of Orthoimagery data sets reported and theoretically accessible.

- Reporting of Orthoimagery viewable data sets has been importantly reduced, decreasing in a 49.5% from 20th November 2019 to 15th April 2020 (from 190 to 96).

  This could be caused by that the situation that reporting of viewable data sets is progressively focusing on INSPIREd Orthoimagery data sets, rather than other Orthoimagery data sets not transformed according the Directive.

- Reporting of Orthoimagery downloadable data sets has experimented a moderate increase of 14.6% from 22nd June 2018 to 15th April 2020 (from 41 to 47).

  This indicates a slight improvement of Orthoimagery data sets ready to be downloaded, but a lot of work is still to be done in order to meet the October 2020 deadline for providing conformant download services. Additionally, the most interesting indicator here would be the conformance of such downloadable data sets according the Directive. Hopefully available in short.

- Only 9 out of 31 countries seems to have National coverage of downloadable INSPIRE Orthoimagery data sets, which represents a 29.0% of all of them.

- Only 4 out of 31 countries seems to have National coverage of downloadable INSPIRE Orthoimagery data sets, which represents only a 12.9% of all of them.

- At the moment, there is no information about the difference in availability of traditional RGB terrestrial orthophotos and multi-band data from satellites or other types of sensors.

General remarks

- The rate and status of implementation of both themes across Europe is encouraging but taking into account that the deadline for providing conformant download services is October 2020 there is still a lot of work to be done.

- The conformance rate for those data sets available through the INSPIRE Geoportal would be a better indicator about the progress in the implementation of the Directive across Member States. The specific metadata records / fiches in the geoportal do neither specify the INSPIRE conformity. This will be further investigated during the rest of 2020.

- During the rest of 2020 it would be promoted the sharing of related experiences between Member States through the INSPIRE Community Forum, focusing on:

  - Those Member States without Elevation and Orthoimagery data sets published in the INSPIRE Thematic Viewer, or which lost their viewable and/or downloadable data sets in the period analysed.

  - Those Member States which started to provide viewable and/or downloadable data sets in the period analysed.

  - Any other existing examples of Elevation and Orthoimagery network services available.

NOTE: The statistics presented in this analysis, related to the Elevation and Orthoimagery themes, were gathered from the INSPIRE Thematic Viewer on 15th April 2020, 20th November 2019 and 22nd June 2018.

Statistics currently available in this viewer are regularly updated over time.

2. OVERVIEW OF THE FACILITATOR'S ACTIVITY

This section provides an overview of the content published in both on-line forums in the scope of this report and describes basic statistics of the activity which has taken place in them.

In summary:

- Activities for promoting the forums.
- Type of resources contents in the forums: number of discussion topics (still open or already closed), content pages and special pages, files shared, change or good practice proposals, new stakeholders reached.
- Activity registered from members in the forums, through their responses and participation in the discussion topics (number of replies and views).
- A summary of the facilitator's activity during the INSPIRE Helsinki 2019 Technical Conference.

2.1. Overview of the facilitation activity

This chapter provides a summary of the activity of the facilitator in the on-line platform for the two forums or discussion groups in the scope of this report.

2.1.1. Aspects affecting obtention of statistics

The new INSPIRE Community Forum platform was designed to implement a new system for tagging contents of the platform with a list of appropriate controlled tags (TC-Tags).

While this powerful feature constitutes a clear improvement for classifying information resources and of the consequent capabilities platform users have to search for contents of their interest, it forced to update the version of the ELGG software in which the platform has been based since its initial launch at the end of 2014.

As a result of this software update, some of the tools facilitators previously had in their hands to monitor membership and other basic statistics of the forums have been lost in the implementation of the new version of the platform.

Now all people registered in the platform are members of the whole INSPIRE Community Forum and they can configure the notifications they are willing to get regarding certain contents, which are appropriately classified with controlled tags. For example, they can get notifications when contents are published in a specific forum discussion group (based on controlled tags associated with this group), or when contents are published assigning (other different) specific controlled tags (controlled tags associated with specific knowledge areas).

Therefore, the concept of membership joined to a specific cluster of the old INSPIRE Thematic Clusters platform has been replaced in the new INSPIRE Community Forum by the concept of members subscribed the controlled tag associated to this concrete discussion group forum (formerly cluster).

In the case of the *Software & Tools* and *Elevation, Orthoimagery, Reference systems & Geographical grids* discussion group forums the associated controlled tags are "*TC-SW_Tools_Services*" and "*TC-Elevation_Othoimagery_Grids*", respectively.

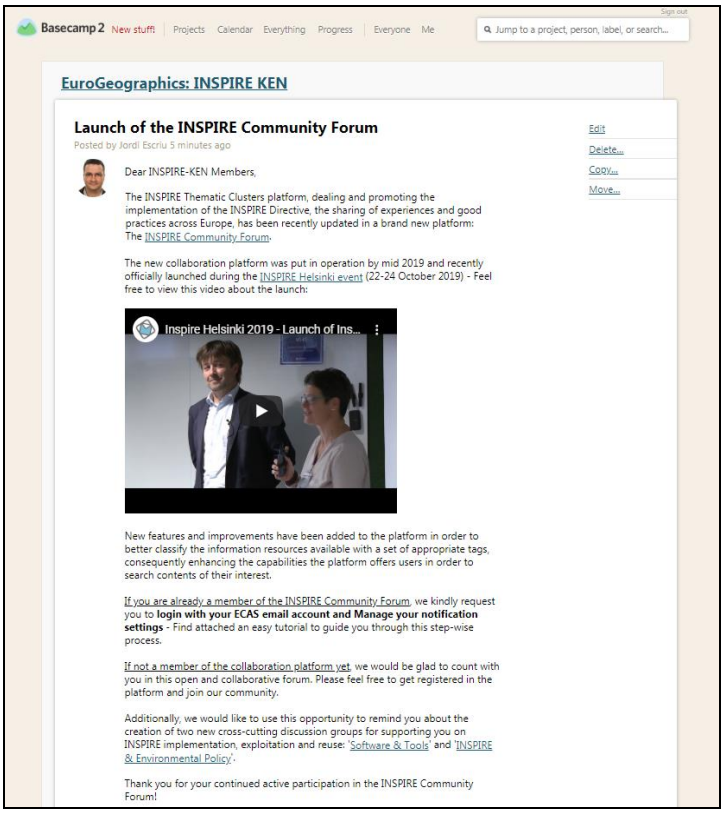
2.1.2. General activities to improve and promote the platform

General activities for improving and promoting the new INSPIRE Community platform has been performed by the facilitator:

In 2019

- A **new completed version of the controlled tags list (*List of TAGS version 0.5*)** was sent to JRC on 16/07/2019. See section A.1 in ANNEX A.
- This version of the list of controlled tags was accompanied with a **proposal for assigning tags and/or group of tags to different content sections and discussion groups of the platform**, in order to control the contents appearing in each of them.

  Concretely, it was proposed to untie controlled tags under the *INSPIRE Knowledge Base Categories* and *Typology of posting issues* virtual views from any sections and/or discussion groups of the platform. The reason behind this proposal, which was adopted by the facilitators group, was that these specific controlled tags are functional just for filtering contents, while other controlled tags should determine the classification of contents (e.g. a specific discussion topic, new post, etc.) in the platform.
- By mid-November 2019 **communications were sent to the EuroGeographics INSPIRE-KEN community** (through the EuroGeographics Basecamp platform) **and the EMODnet community** (though appropriate contacts) **in order to make them aware of the recent launch of the INSPIRE Community Forum** during the recent INSPIRE Helsinki 2019 Technical Conference. The opportunity was leveraged for requesting members for active participation and revision of the notifications and the privacy settings of the platform, as well as promoting further enrolment of contacts.



- Finally, a similar communication was sent through the news post channel in both, the *Software & Tools* and the *Elevation, Orthoimagery, Reference systems & Geographical grids* discussion group forums.

In 2020

- A **revision of the controlled tags currently used in the platform** was carried out by mid-April 2020. As a result, a number of uncontrolled additional tags following the 'TC-' tag naming convention has been identified to be in use in the INSPIRE Community Forum platform, without previous agreement between the JRC and the facilitators in order to appropriately classify the contents in the platform.

  These tags are enumerated in section A.2 in ANNEX A. The main purpose of this analysis is to discuss and decide on their potential agreement and adoption in upcoming teleconferences between the JRC and the facilitators.

- **A proposal to adopt a short list of the tags identified during the process** is also included in **Section A.2** of the mentioned Annex**.**

  In case of those tags being finally adopted in the future (if any), they should be integrated in a new version of the list of agreed controlled tags.

  Identification of new controlled tags is understood as part of the knowledge management tasks, the evolution of activities in the community and the maintenance of the system chosen for classifying contents in the platform.

  As a recommendation for those tags being not finally adopted, they should be transformed to regular tags. Platform contents tagged with them should be reclassified using regular tags (i.e. not following the 'TC-' tags naming convention).

  The proposal presented in this document is considered a first input. The list of tags to be finally considered for adoption may be further enriched by JRC and facilitators during the discussion process.

- See above the related activities performed during year 2019 for improving the classification of contents in the platform.

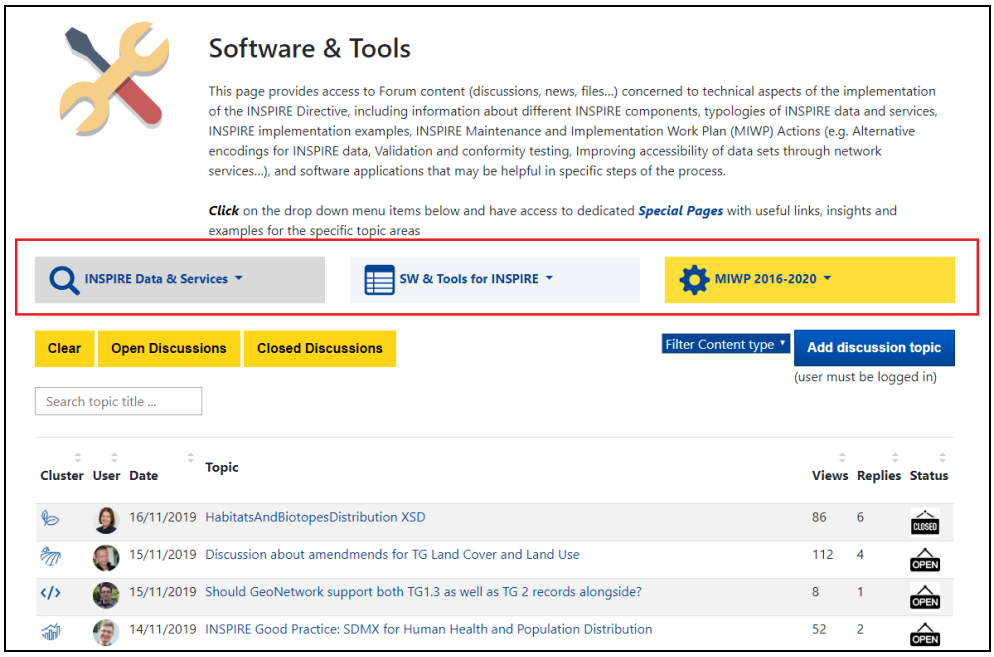
2.1.3. Software & Tools forum

The landing page of the INSPIRE Community Forum provides access to the *Software & Tools* content section through the following URL:

https://inspire.ec.europa.eu/forum/tcc

The previous content section allows users to identify any discussion topics of the platform which are related to technical aspects, discussions, issues or focused on software applications and tools for implementing, exploiting and/or using INSPIRE data and services.

As explained in Section 2.1.3.2 *Content – Special Pages*, this landing page also provides easy access to a set of so called special pages by means of 3 different buttons, highlighted with visual-impact icons.



Additionally, there is a landing page of this forum is located at this URL:

https://inspire.ec.europa.eu/forum/groups/profile/215867/software-tools

This forum landing page only provides access to the discussion topics opened in the *Software & Tools* discussion group, allowing platform users to open new discussion threads on it.

It also includes 3 similar buttons for providing easy access to the special pages of the forum.

Overview of facilitator's work

The *Software & Tools* forum is a totally new content section in the INSPIRE Community Forum platform.

As such, main part of the facilitation tasks in 2019 were concentrated in the design of the forum to structure its contents as well as preparing these new contents from scratch.

Firstly, **structuring work** was carried out in collaboration with the Joint Research Centre (JRC) and consist in the preparation of the structure and the icons / buttons for providing access to special pages. The facilitator mainly conceived the most relevant special pages to accomplish the objectives of this forum taking into account the set of agreed controlled tags which classifies all contents of the platform. And finally thought up the best way to group them, in the buttons referred above.

Secondly, the work of **preparing the initial contents for the set of special pages** took a long time in this phase. Such contents have been be improved in the first part of 2020 and will be progressively completed till the end of the year.

Rest of time and effort were spent in **promoting and facilitating the forum**, while creating an initial group of members for starting the activity, which is quite active in the INSPIRE Community Forum as per the number of discussion topics opened since the creation of this group.

The main activities of the facilitation in 2020 have consisted in:

- The **preparation of the INSPIRE Conference 2020 in Dubrovnik** (see more details in Section 2.3).
- The publication of **dedicated page describing the good practice for the implementation of an INSPIRE coverages demonstration service (WCS)**.

  This page links to a new website offering the practical results achieved in the *Workshop "Feel the power of INSPIRE WCS / WCPS in your hands"* delivered in the INSPIRE Helsinki 2019 technical event.

  The website may be reached through this link: *INSPIRE Coverages demystified*
- **Engagement of software companies has been also promoted** in order to provide an update about the most used applications for implementing INSPIRE, by organising their participation in the special session "*INSPIRE Reference Data – Ready to take off?*" jointly organised with the Topographic, Cadastral and Reference data group.

  Software and technical-related activities of MIG-T will continue to be followed by this group to inform through the forum about the progress in the MIWP Actions. This is considered a priority, particularly in the area of alternative encodings for INSPIRE data.

2.1.3.1. Members

Considering the aspects mentioned in Section 2.1.1, facilitators are not able to monitor the number of members subscribed to a specific discussion group forum of the new platform.

JRC may trace membership over time extracting data from the server logs where the platform is operating. Particularly, the "*TC-SW_Tools_Services*" controlled tag, which identifies this forum.

2.1.3.2. Content

This section provides statistics about the discussion topics, pages, files uploaded and news posts currently available in the *Software & Tools* forum platform.

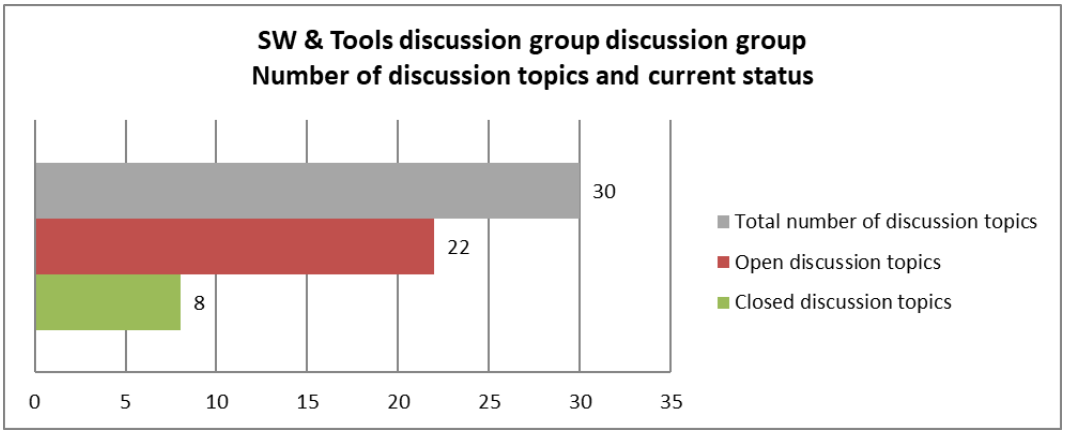
Discussion topics

In mid-April 2020 the *Software & Tools* discussion group forum counts with a total of **30 discussion topics**, experimenting an increase in a 57.89% from mid-November 2019 (when the forum had 19 discussion topics)

Open discussions represent threads where the discussion is still on-going or a specific question remains open and waiting for feedback or new contributions in the platform. Additionally, they may correspond to threads which just collect experiences, opinions and feedback from participants, rather than being issues itself. This threads may remain open a longer.

On the other hand, closed discussions correspond to threads where active participants arrived at an agreed and mature solution to a specific issue through the platform, where a question got a proper and acceptable answer from other members. Closed threads may also correspond to discussion which collected enough materials and feedback related to the topic.

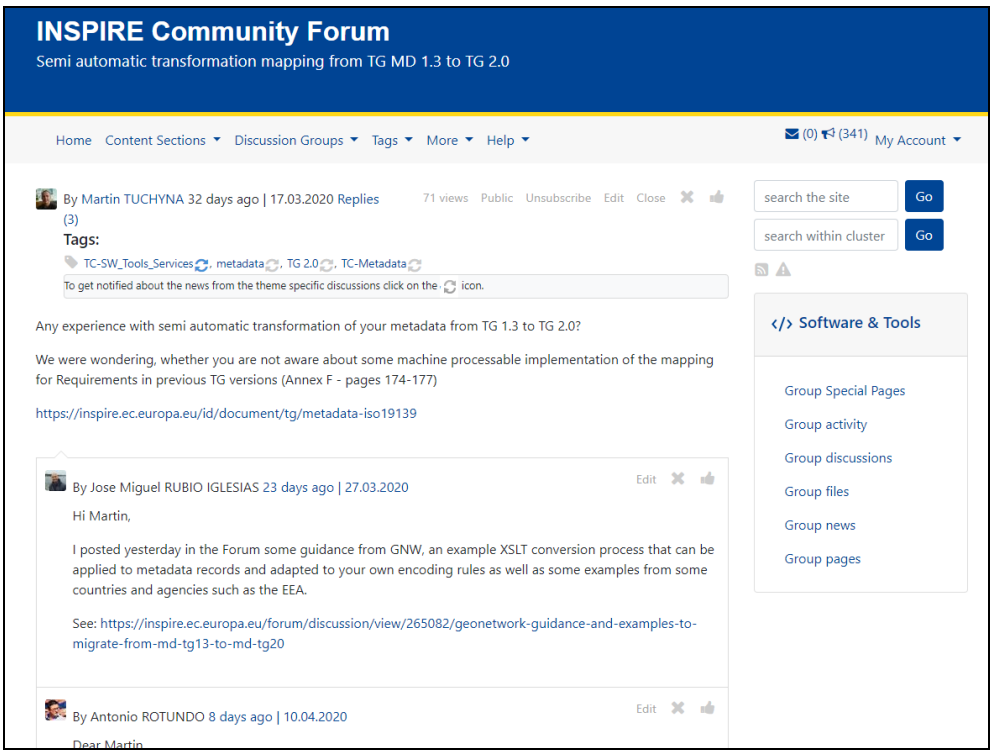
As shown in the graphic below, the current number of closed discussion topics is 8, which corresponds to a 26.7% of the topics.

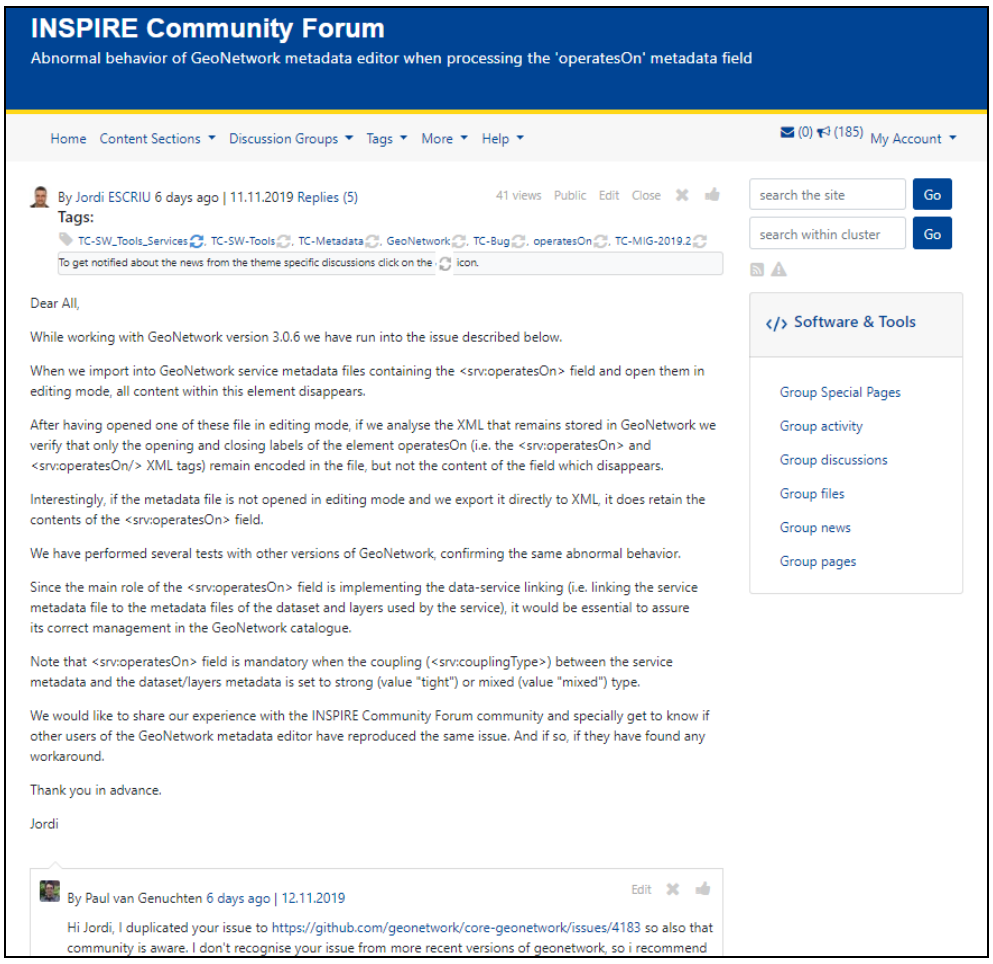


- List of relevant Discussion topics in the period 2019 - 2020:

Discussion topic (Name & URL)	Total Number of Views	Total Number of Replies	Status
ISO AP 1.0.0 schemalocation to ISO website not available	98	8	Open
Geonetwork 3.4 and THREDDS/ERDDAP server	394	7	Closed
Abnormal behavior of GeoNetwork metadata editor when processing the 'operatesOn' metadata field	89	5	Open
What is the best Software for INSPIRE use?	151	4	Open
Workshop on the INSPIRE reference validator	255	4	Closed
Geonetwork gmx/gmd:ci_DateType validation issues	226	4	Open
Semi-automatic transformation mapping from TG MD 1.3 to TG 2.0	69	3	Open
Important news on the INSPIRE Registry service and the Re3gistry software	51	3	Closed
How to validate INSPIRE Annex II and Annex III datasets	78	3	Open
Implementation Spatial Scope/Priority Datasets codelists in GeoNetwork	236	3	Closed
What is meant with "language-neutral-value" (TG metadata 2.0)	211	3	Open
INSPIRE Coverages demo service	38	2	Open
Can GeoPackages be used for INSPIRE	63	2	Open
New INSPIRE Reference Validator release version available 1.08	77	2	Open
Issues with INSPIRE-theme classification in GeoNetwork	96	2	Open
Geoserver - problem with geometry in DataType	208	2	Open
GeoNetwork guidance and examples to migrate from MD TG 1.3 to MD TG 2.0	57	1	Open
Should GeoNetwork support both TG1.3 as well as TG 2 records alongside?	66	1	Open
Feature catalogue metadata extension implementation	90	1	Open
Environmental Data Retrieval API	84	1	Closed

- Example Discussion topics:

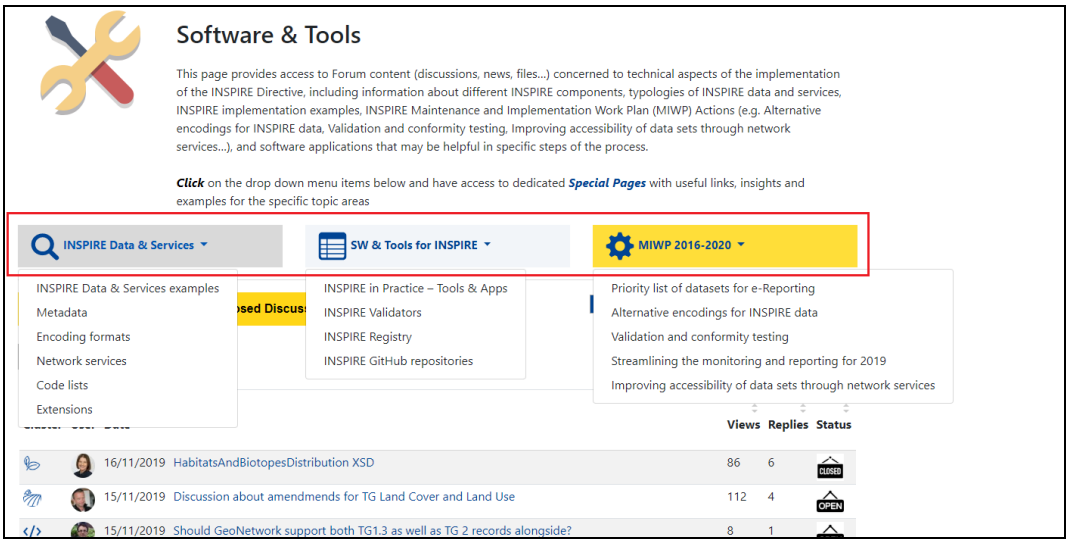




Special pages

Forum materials are documented in special pages in the *Software & Tools* forum.

Either the landing page of the *Software & Tools* content section or the landing page of the *Software & Tools* discussion group is provided with 3 buttons, highlighted with visual-impact icons, to easily provide access to a set of special pages.



During 2019 and 2020 the group has a total of **15 special pages**. As mentioned and showed above, they can be accessed through 3 different buttons (a, b and c):

a) ***INSPIRE Data & Services*** button, providing access to 6 special pages on different technical aspects / components of INSPIRE:

- INSPIRE Data & Services examples.
- Metadata.
- Encoding formats.
- Network services.
- Code lists.
- Extensions.

b) ***Software & Tools for INSPIRE*** button, providing access to 4 special pages on different applications which may help in implementing, exploiting or using INSPIRE:

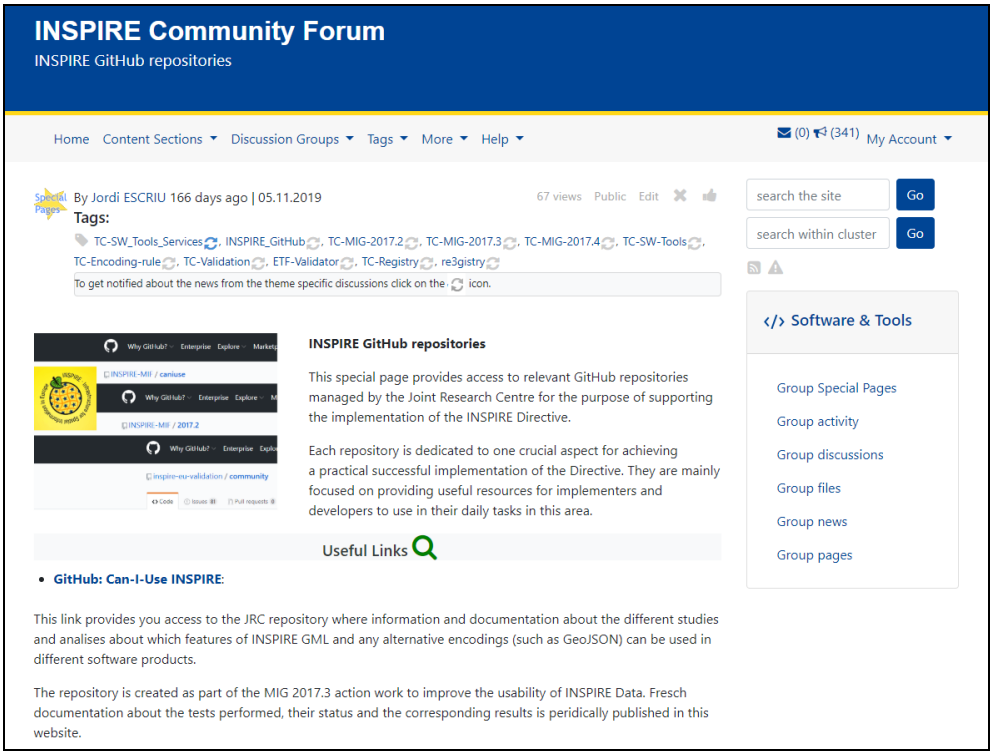
- INSPIRE in Practice – Tools & Apps.
- INSPIRE Validators.
- INSPIRE Registry.
- INSPIRE GitHub repositories.

c) ***MIWP 2016-2020*** button, providing access to 5 special pages on the different actions endorsed and pushed by INSPIRE MIG under its current work programme:

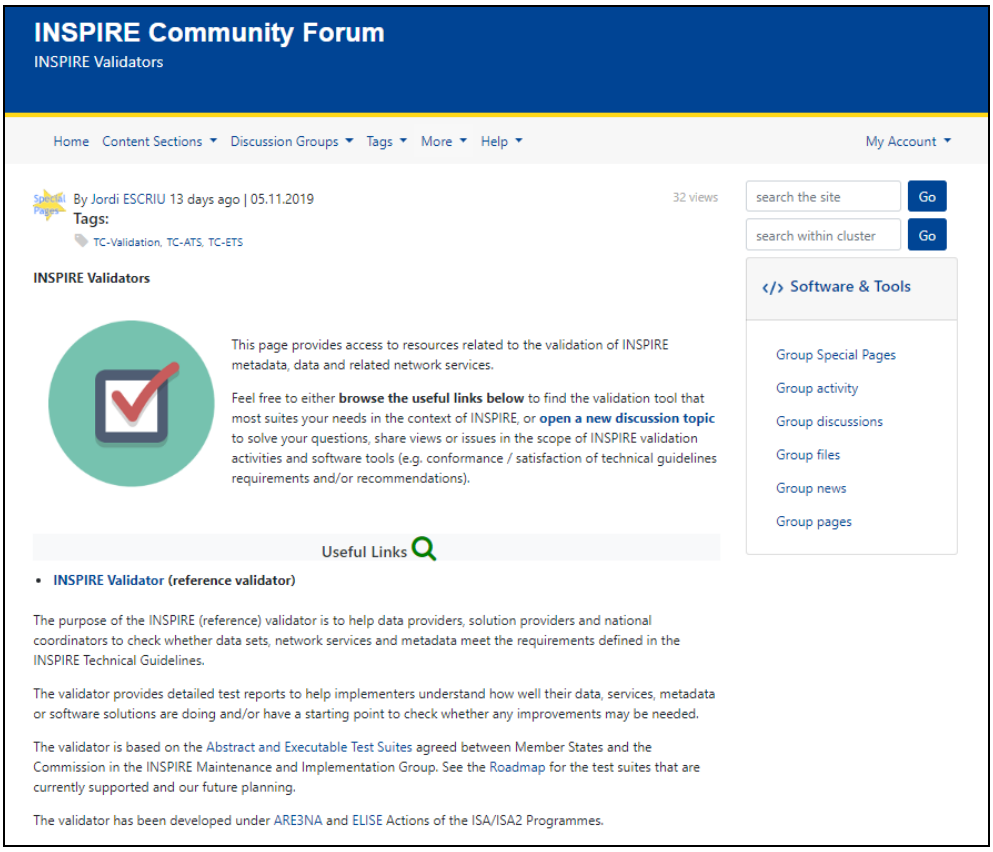
- Priority list of datasets for e-Reporting.
- Alternative encodings for INSPIRE data.
- Validation and conformity testing.
- Streamlining the monitoring and reporting for 2019.
- Improving accessibility of data sets through network services.

- Example Special Pages:

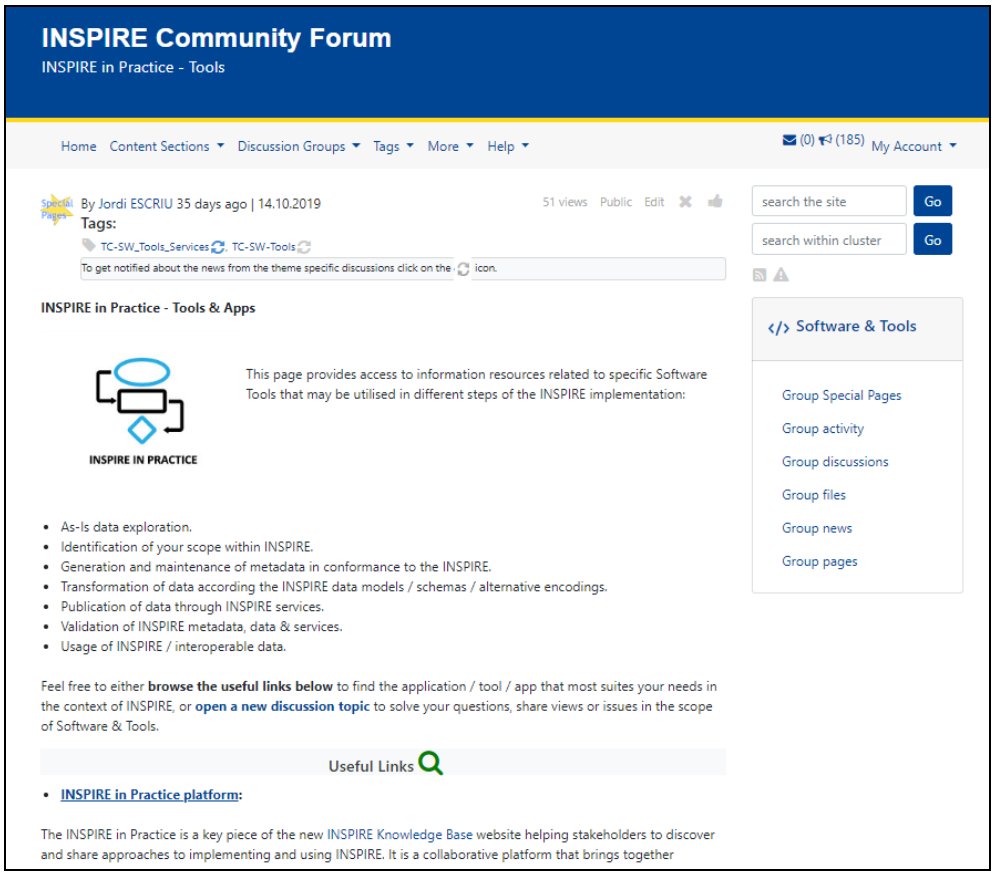
  - INSPIRE GitHub repositories



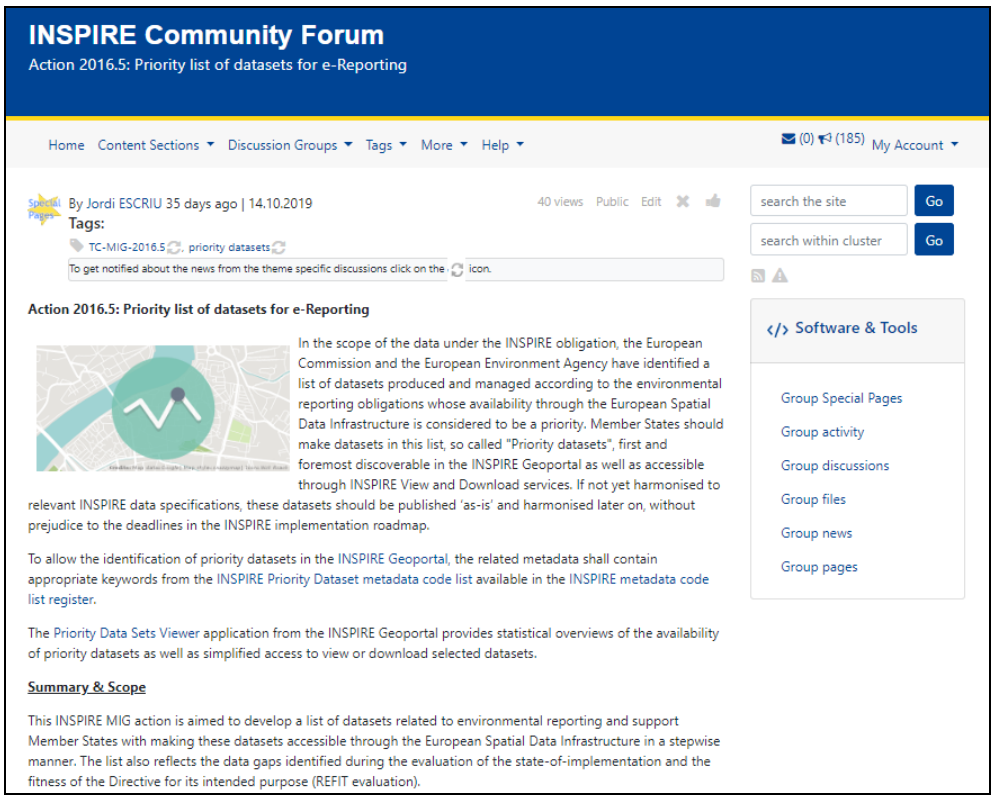
  - INSPIRE Validators



- INSPIRE in Practice - Tools & Apps



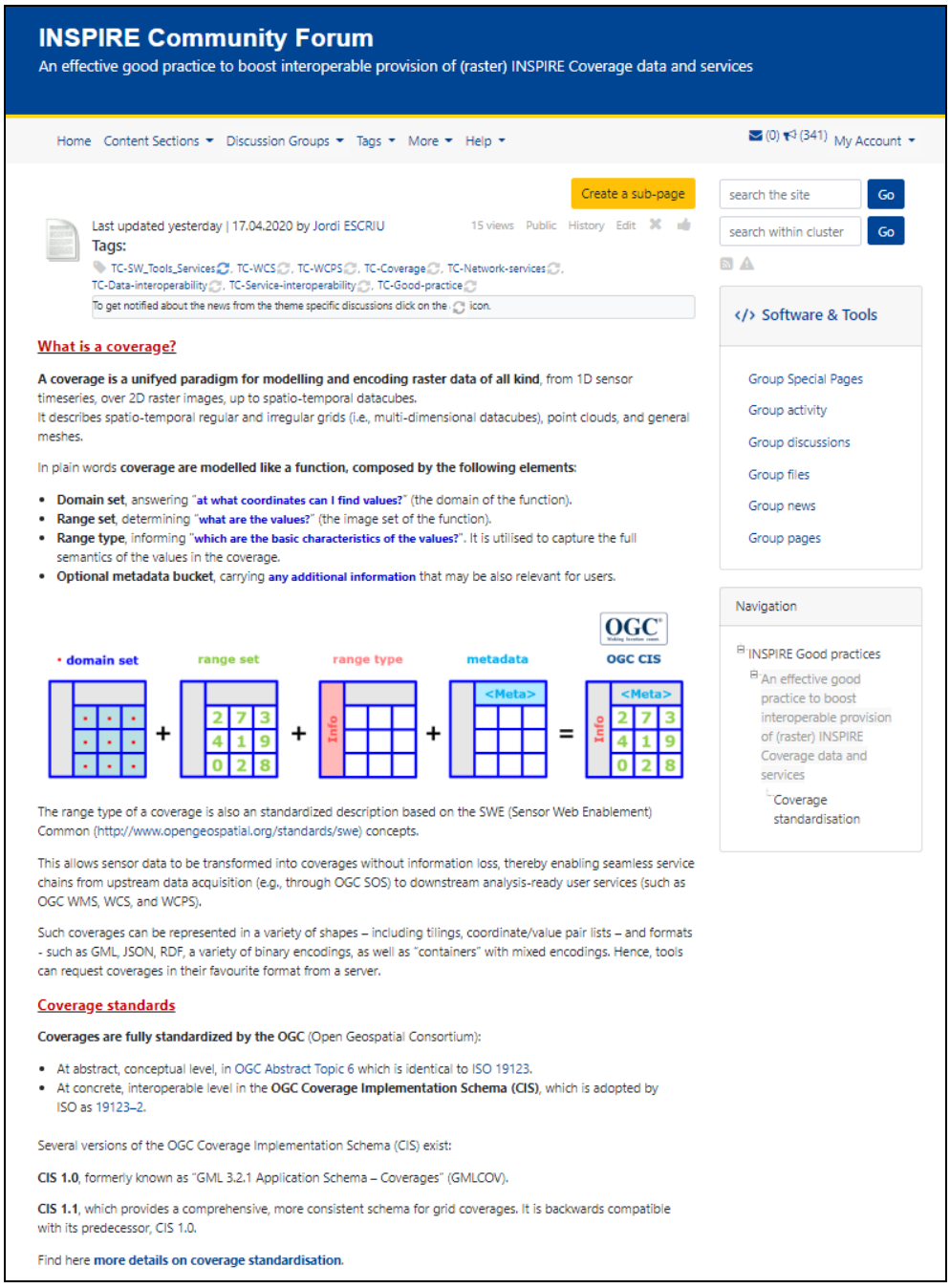
- Action 2016.5: Priority list of datasets for e-Reporting



Pages

Apart from special pages, which are dedicated to draw attention to key contents, the *Software & Tools* forum also counts with regular pages to document any other contents which may be relevant in this group.

- An effective good practice to boost interoperable provision of (raster) INSPIRE Coverage data and services

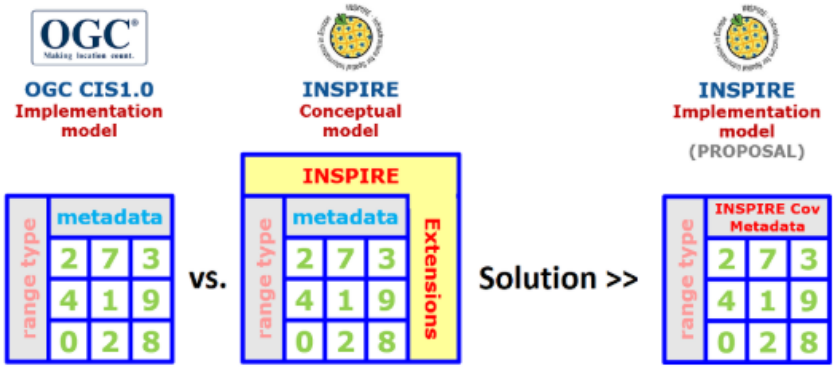


This dedicated page describes a good practice for the implementation of an INSPIRE coverages demonstration service (WCS), which points at a new website offering the practical results achieved in the *Workshop "Feel the power of INSPIRE WCS / WCPS in your hands"* hold in Helsinki 2019: *INSPIRE Coverages demystified*

Good Practice: Proposal for an interoperable solution

A functional solution to align INSPIRE coverages to OGC standards, is amending in a simple, OGC compliant way the INSPIRE XSD coverage schemas by adding the INSPIRE extensions as coverage metadata.

In other words, **INSPIRE extensions may be easily provided within the coverage metadata bucket**, being one of the components of an OGC coverage as described earlier - See below.



A **coverage service for various (raster data) INSPIRE themes** has been setup to overcome these issues as a result of the related activities performed in the scope of the INSPIRE Community Forum (Thematic Clusters) during the last years, particularly based on the results from the Workshop "Feel the power of INSPIRE WCS / WCPS in your hands" organised in the INSPIRE Helsinki 2019 Technical Conference:

"***INSPIRE Coverages Demystified***": **http://inspire.rasdaman.org/**

The demo service allows the user to play with different service requests to get INSPIRE coverage data and metadata, analyse and combine different data layers (cross-theme fusion), download and present the final results.

It is specially designed to demonstrate use of coverages and WCS/WCPS for several INSPIRE themes: Elevation, Orthoimagery and Land cover - The service is powered by the **rasdaman WCS reference implementation** and offers sample data from a regional data provider (Institut Cartogràfic i Geològic de Catalunya, ICGC).

The **objectives** are to:

- Experience the potential of these technologies.
- Fully-understand the main benefits of integrating them within their daily geospatial businesses and analytical tasks.

...but mainly:

- **Get feedback from the community on this functional good practice to align INSPIRE coverages to OGC standards**, by amending in a simple, OGC compliant way the INSPIRE XSD coverage schemas (as INSPIRE coverage metadata).

Provide your feedback

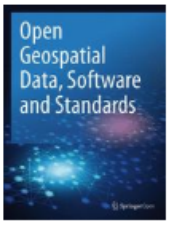
A related discussion thread has been open in the Software & Tools group of the INSPIRE Community Forum for this purpose:

https://inspire.ec.europa.eu/forum/discussion/view/265095/inspire-coverages-demo-service

Find details about preliminary analysis

- Article "**INSPIRE coverages: an analysis and some suggestions**":

https://link.springer.com/article/10.1186/s40965-019-0059-x



Files uploaded

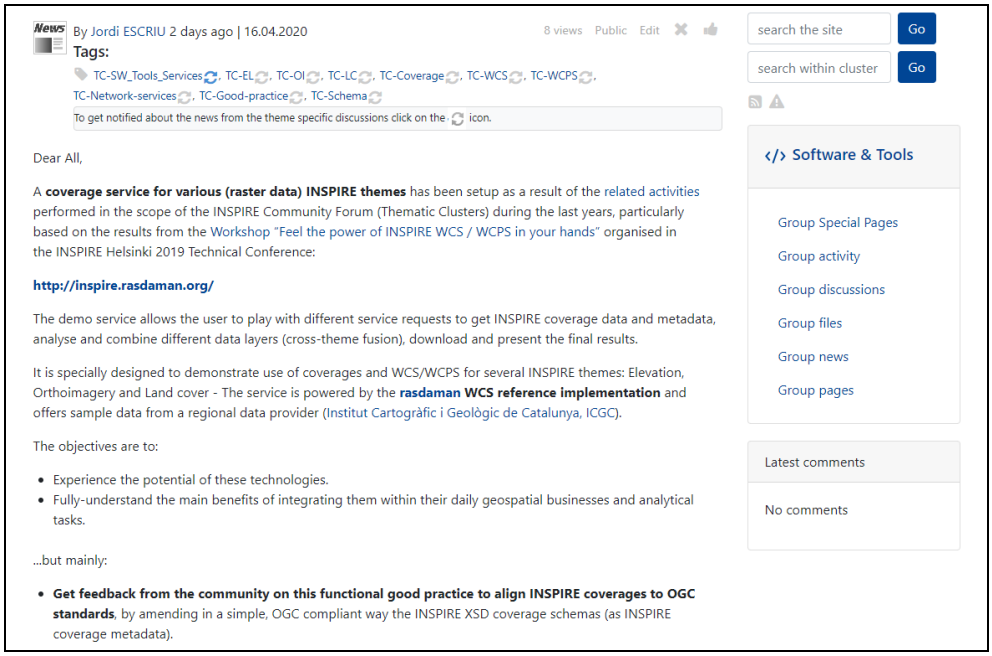
Apart from linking external resources available on the Internet, the platform has the possibility to upload files to both, discussion topics and pages.

In mid-April 2020, the *Software & Tools* forum counts with **1 file uploaded to the platform**.

News items

News for the promotion of activities of the forum and related to the thematic areas in the scope has been published to a total of **6 news posts**.

- Example News Posts:
  - INSPIRE Coverages Demo Service - http://inspire.rasdaman.org/



News By Jordi ESCRIU 2 days ago | 16.04.2020 8 views Public Edit

Tags:

TC-SW_Tools_Services, TC-EL, TC-OI, TC-LC, TC-Coverage, TC-WCS, TC-WCPS, TC-Network-services, TC-Good-practice, TC-Schema

To get notified about the news from the theme specific discussions click on the icon.

Dear All,

A **coverage service for various (raster data) INSPIRE themes** has been setup as a result of the related activities performed in the scope of the INSPIRE Community Forum (Thematic Clusters) during the last years, particularly based on the results from the Workshop "Feel the power of INSPIRE WCS / WCPS in your hands" organised in the INSPIRE Helsinki 2019 Technical Conference:

http://inspire.rasdaman.org/

The demo service allows the user to play with different service requests to get INSPIRE coverage data and metadata, analyse and combine different data layers (cross-theme fusion), download and present the final results.

It is specially designed to demonstrate use of coverages and WCS/WCPS for several INSPIRE themes: Elevation, Orthoimagery and Land cover - The service is powered by the **rasdaman WCS reference implementation** and offers sample data from a regional data provider (Institut Cartogràfic i Geològic de Catalunya, ICGC).

The objectives are to:

- Experience the potential of these technologies.
- Fully-understand the main benefits of integrating them within their daily geospatial businesses and analytical tasks.

...but mainly:

- **Get feedback from the community on this functional good practice to align INSPIRE coverages to OGC standards**, by amending in a simple, OGC compliant way the INSPIRE XSD coverage schemas (as INSPIRE coverage metadata).

search the site Go

search within cluster Go

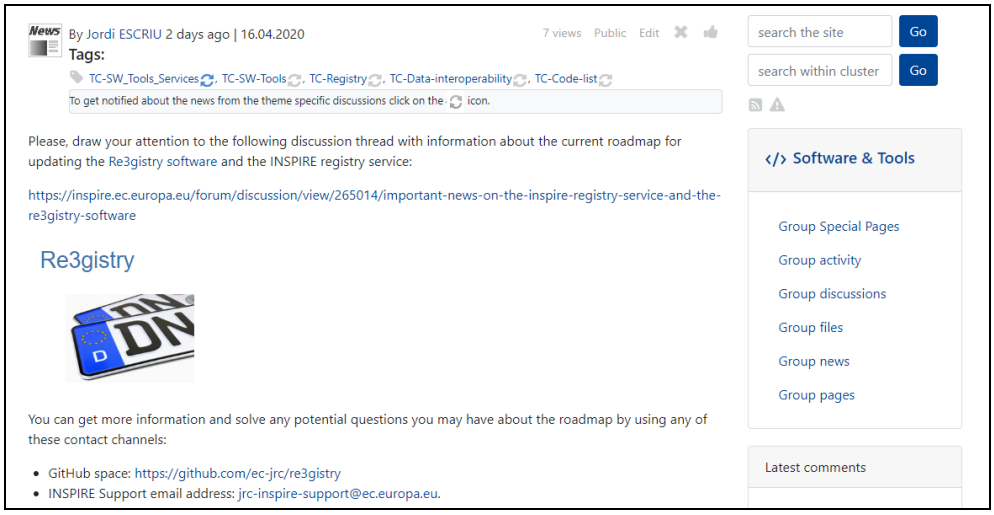
Software & Tools

Group Special Pages
Group activity
Group discussions
Group files
Group news
Group pages

Latest comments

No comments

  - Re3gistry software roadmap & INSPIRE registry service update plans



News By Jordi ESCRIU 2 days ago | 16.04.2020 7 views Public Edit

Tags:

TC-SW_Tools_Services, TC-SW-Tools, TC-Registry, TC-Data-interoperability, TC-Code-list

To get notified about the news from the theme specific discussions click on the icon.

Please, draw your attention to the following discussion thread with information about the current roadmap for updating the Re3gistry software and the INSPIRE registry service:

https://inspire.ec.europa.eu/forum/discussion/view/265014/important-news-on-the-inspire-registry-service-and-the-re3gistry-software

Re3gistry

You can get more information and solve any potential questions you may have about the roadmap by using any of these contact channels:

- GitHub space: https://github.com/ec-jrc/re3gistry
- INSPIRE Support email address: jrc-inspire-support@ec.europa.eu.

search the site Go

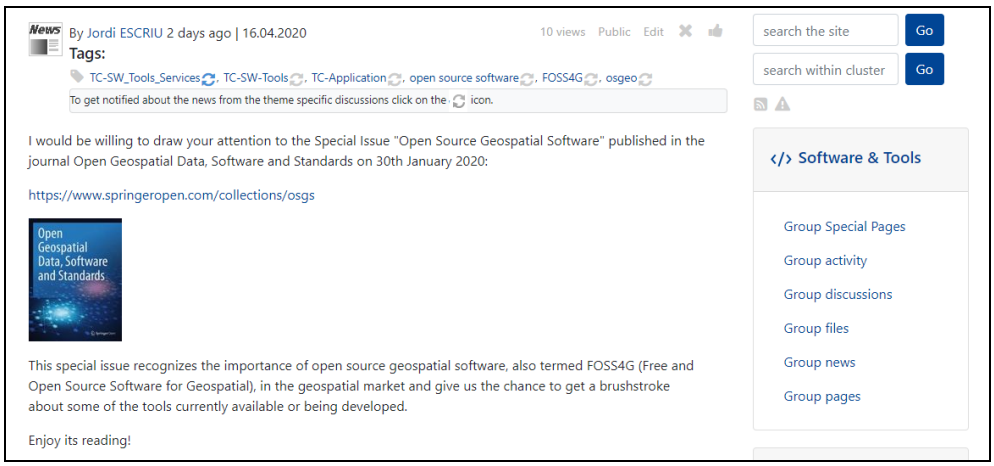
search within cluster Go

Software & Tools

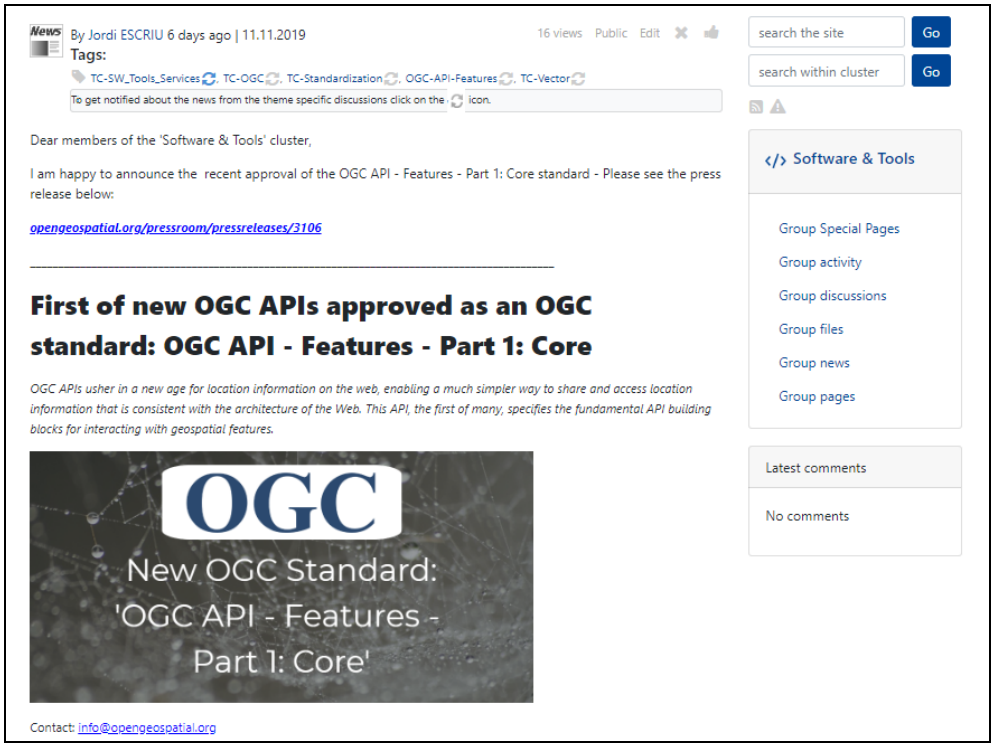
Group Special Pages
Group activity
Group discussions
Group files
Group news
Group pages

Latest comments

- Special Issue on "Open Source Geospatial Software" in the journal Open Geospatial Data, Software and Standards



- First of new OGC APIs approved as an OGC standard: OGC API - Features - Part 1: Core



2.1.3.3. Activity

The figures provided in this section correspond to the activity of the *Software & Tools* forum platform in mid-April 2020, corresponding to Phase 1 of the INSPIRE Community Forum.

The **total number of replies** to discussion topics is **64** - The level of interaction of members in Phase 1 is limited but quite high compared to other with the whole activity in the INSPIRE Community Forum.

Increase of membership (members of the platform subscribed to the forum's associated tag) and participation will be promoted during the rest of 2020, where it is expected a relevant increase of activity due to the cross-cutting nature of the discussions in the scope and the obligations for delivering data for all INSPIRE themes by this year.

The **average number of replies per discussion is 2.1 -** which represents a slight increase of interaction compared to the one obtained at the end of 2019, where the average was **1.9**.

These figures shall be clearly improved during the year 2020. Some of the options currently faced are promoting the whole INSPIRE Community Forum with online webinars or physical events during the next INSPIRE Conference 2020 in Dubrovnik.

However, the **total number of views** to discussion topics is not that bad, with **3361** – This highlights the need to gain membership and visibility.

2.1.4. Elevation, Orthoimagery, Reference systems & Geographical grids forum

The landing page of this forum is located at this URL:

https://inspire.ec.europa.eu/forum/groups/profile/206

This forum landing page provides access to the INSPIRE Geoportal data sets corresponding to themes Elevation, Orthoimagery, Reference systems and Geographical grids, and also to the discussion topics opened in the *Elevation, Orthoimagery, Reference systems & Geographical grids* discussion group, allowing platform users to open new discussion topics on it.

Overview of facilitator's work

The *Elevation, Orthoimagery, Reference systems & Geographical grids* forum has continued its path. Main facilitation tasks in this Phase are summarized below.

In 2019

On 2nd September 2019 a **List of multi-purpose INSPIRE datasets for the Elevation and the Orthoimagery themes** was identified in this GoogleDocs spreadsheet. The aim of this list was to provide JRC with a set of generic data set list in the scope of these themes which could be prioritized by Member States in their respective data sets provision.

Activities of the forum continued to be focused on facilitating and trying to solve the issues in the implementation of INSPIRE coverages. The main action was the organisation of the ***Workshop "Feel the power of INSPIRE WCS / WCPS in your hands"*** in the INSPIRE Helsinki technical event (see Section 2.2).

Some efforts were also devoted to publishing **contents and materials regarding the EMODnet bathymetry community**, with the aim of reaching it and promote their active participation on the forum. This was reinforced with emails and communications addressed to relevant contacts of this community. More efforts have to be done in the near future to further engage this key community.

In 2020

Activities of the forum has been mainly focused on the **preparation of the INSPIRE Conference 2020 in Dubrovnik** (see details in dedicated Section 2.3) and going ahead in solving the remaining issues in the implementation of INSPIRE coverages.

Apart of facilitating through the platform the discussions in this area, the main actions have been:

- The **publication of documentation summarizing the *Workshop "Feel the power of INSPIRE WCS / WCPS in your hands"*** hold in Helsinki.
- The **opening of a new website offering the practical results of this good practice including an INSPIRE coverages demonstration service (WCS)**: INSPIRE Coverages demystified, not only to allow users to experience the potential of these technologies and

fully-understand the main benefits of integrating them within their daily geospatial businesses and analytical tasks, but also get feedback from the community on this functional good practice to align INSPIRE coverages to OGC standards.

As a natural continuation of the mentioned achievements, the effort is now being focused in formally documenting this good practice for the future evaluation of MIG-T. This work is currently on-going, with the objective of have it finished and presented when the INSPIRE Conference 2020 is finally celebrated.

With this objective in mind, a new **Workshop titled "*INSPIRE Coverages, Demystified*"** was accepted for the Conference that was being hold in May 2020 (see organizational details in Section 2.3), with the aim to present the final results of this long-effort activity.

Since the whole event has been postponed due to the coronavirus pandemic crisis, the new plan is to organise a webinar to present this topic by May (same dates initially foreseen for the Conference), and probably provide more advance results in a new workshop when the Conference 2020 finally takes place.

All the mentioned activities will hopefully help in closing some of the discussion topics on encoding and implementation of INSPIRE coverages which are still on-going in the platform.

As a continuation of the connection with the **EMODNET bathymetry community** two actions are currently in place:

- A **dedicated discussion topic is on-going** in the forum.
- A **presentation about bathymetry data interoperability and INSPIRE is expected for the next INSPIRE Conference 2020 in Dubrovnik**. This presentation was in principle included as part of a special session *"INSPIRE Reference Data – Ready to take off?"* jointly organised with the Topographic, Cadastral and Reference data group.

It is therefore expected to actively engage more members from the EMODNET bathymetry community.

Finally, as part of the task for producing this report, a **revision and assessment of the Elevation and Orthoimagery data sets offered through the INSPIRE Geoportal** in the period from June 2018 to April 2020 has been performed (See Section 1.2.4).

2.1.4.1. Members

As already stated in Section 2.1.3.1, facilitators are not able to monitor the number of members subscribed to a specific discussion group forum of the new platform.

JRC may trace membership over time extracting data from the server logs where the platform is operating. Particularly, the "*TC-Elevation_Othoimagery_Grids*" controlled tag, which identifies this forum.

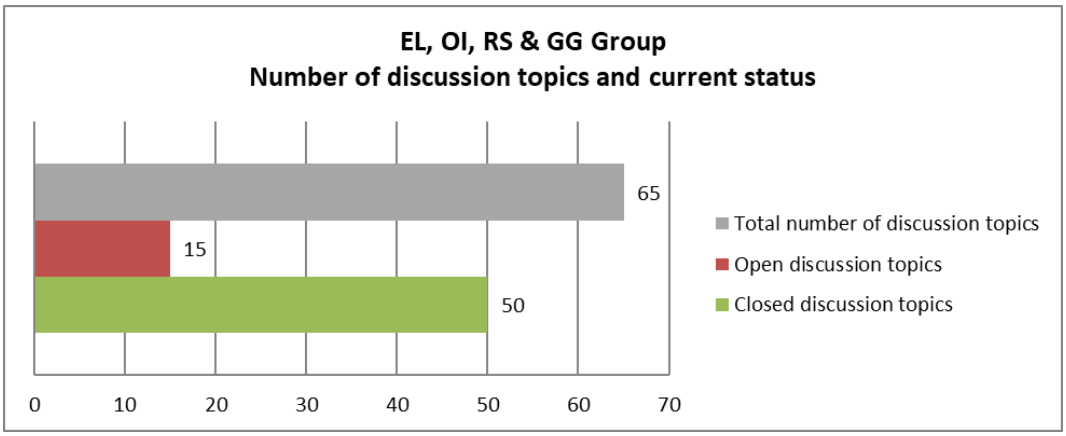
2.1.4.2. Content

This section provides statistics about the discussion topics, pages, files uploaded and news posts currently available in the *Elevation, Orthoimagery, Reference systems & Geographical grids* forum platform.

Discussion topics

In mid-April 2020 the *Elevation, Orthoimagery, Reference systems and Geographical grids* discussion group forum counts with a total of **65 discussion topics** (the forum had 63 discussion topics in mid-November 2019).

As shown in the graphic below, the current number of closed discussion topics is 50, which corresponds to a 76.9% of the topics.



Some of the discussions closed in this forum correspond to those which delivered proposals for changes and amendments of the data specifications – inputs for MIG-2016.4 subgroup.

The long effort pending issues which are still open focused in providing concrete conclusions related to issues in the implementation of INPIRE coverages has received the new input of the good practice delivering an INSPIRE coverage demonstration service ("*INSPIRE Coverages Demystified*"). More details about this good practice are included within heading "*Pages*" in Section 2.1.3.2.

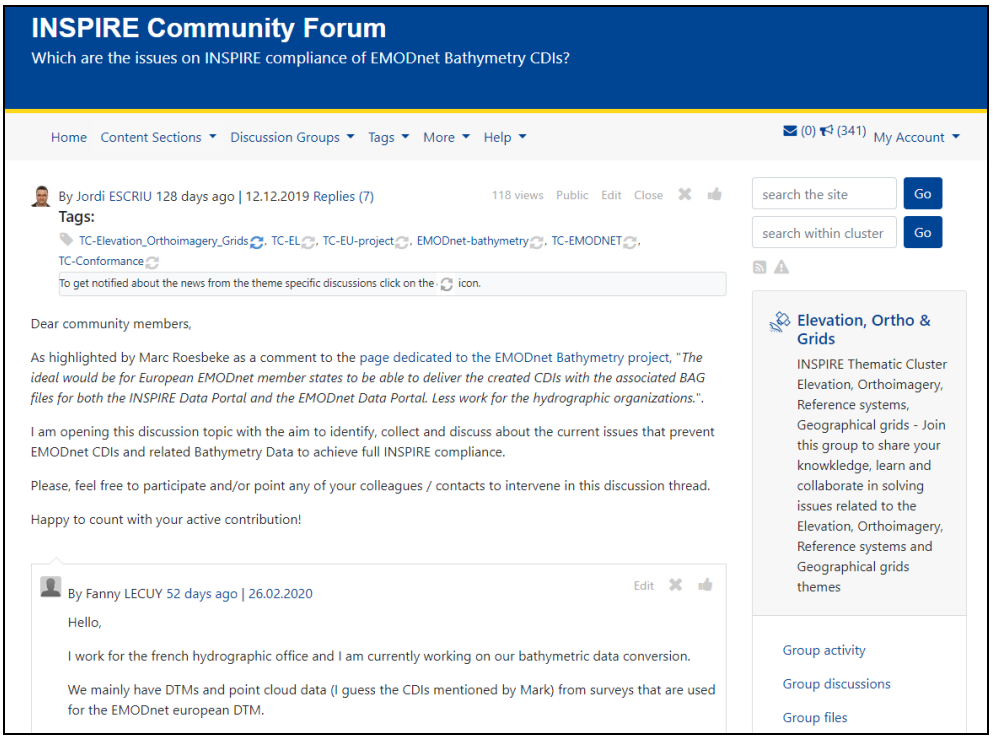
If MIG-T finally decide to take action on the INSPIRE coverage issues currently identified, it could study the dedication of any resources available to analyse each of these individual issues. The good practice has delivered initial proposals for them, but they should be further investigated and concreted at implementation level (encoding).

As far as Member States decide to push for the resolution of the INSPIRE coverage issues in MIG-T, many of the mentioned discussion topics will be resolved and closed in the INSPIRE Community Forum.

- List of relevant Discussion topics in the period 2019 - 2020:

Discussion topic (Name & URL)	Total Number of Views	Total Number of Replies	Status
Which is the correct encoding of gml:sequenceRule axisOrder & gml:axisLabels for GeoTIFF in EPSG 3035 delivered through WCS?	754	17	Open
EL GridCoverage Model - CV_Grid:extent or CV_Grid:limits	483	15	Open
Which is the meaning of the value of the swe:significantFigures element?	418	10	Open
Which are the issues on inspire compliance of EMODNET bathymetry CDIs?	114	7	Open
Is it necessary to set up services for the Coordinate Reference Systems (RS) and the Geographical Grid Systems (GG) data themes?	165	7	Closed
Which ISO 19115 metadata attribute should hold the CV_InterpolationMehod information?	273	5	Closed
Availability of orthoimagery data in the inspire thematic viewer	14	0	Open
Availability of elevation data in the inspire thematic viewer	20	0	Open
Short and floating variables in TIFF DTM	143	1	Open

- Example Discussion topic:



Content pages

Outcomes from the cluster are documented in static content pages in the *Elevation, Orthoimagery, Reference systems and Geographical grids* discussion group forum of the platform.

In mid-April 2020, the cluster has **9 top-level pages** used for structuring, providing access and classifying existing contents. Such contents are documented in **37 content pages** (mostly sub-pages) devoted to different resource types:

a) Successful experiences in delivering pan-European products.

b) Leading projects, at European and national level.

c) Information on data transformation experiences and software tools applicable in the scope.

d) Implementation recommendations and best practices.

e) Overview and summary of the activities of the cluster.

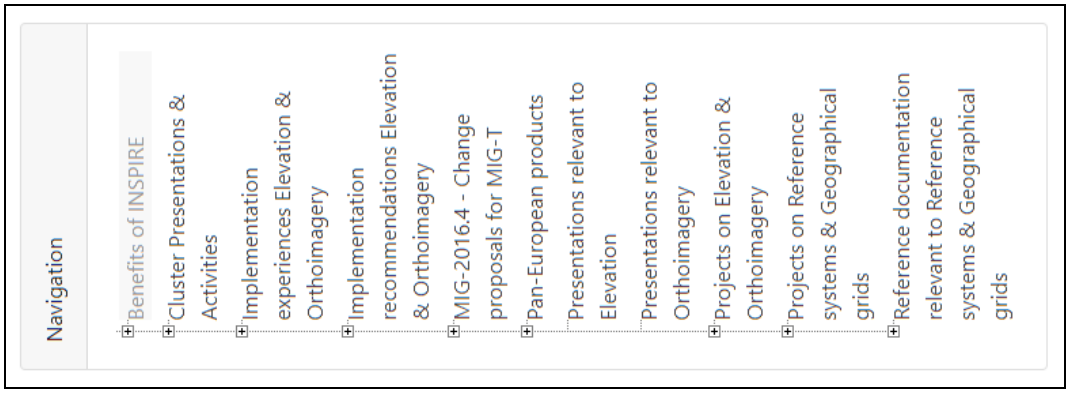
d) Proposals for MIG-2016.4 subgroup.

e) Relevant and useful documentation (presentations, background reference materials, etc.).

f) Summary of past forum events / activities.

At the end of 2019 page navigation was adapted to the new structure of the INSPIRE Community Forum, with a unique discussion group - in contrast to the 5 groups present in the old INSPIRE Thematic Clusters platform (4 thematic discussions groups corresponding to Elevation, Orthoimagery, Reference systems and Geographical grids, plus 1 common cross-cutting discussions group). This re-structuring work has allowed to improve access to content-pages of the forum, while reducing the number of top-level pages (giving access to the former ones and classifying the contents).

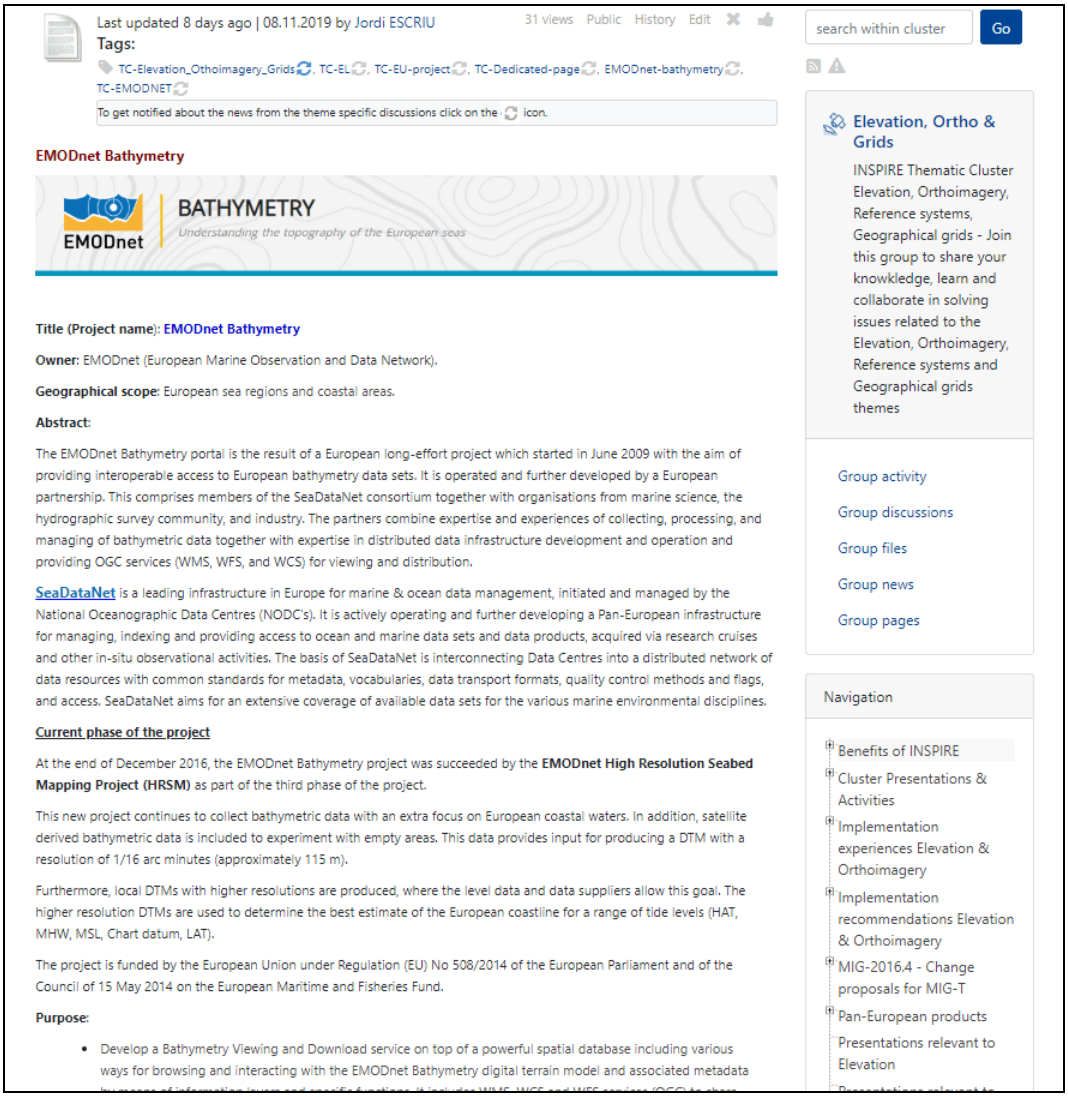
The new structure for navigating pages is shown in the figure below:



- Example Pages:

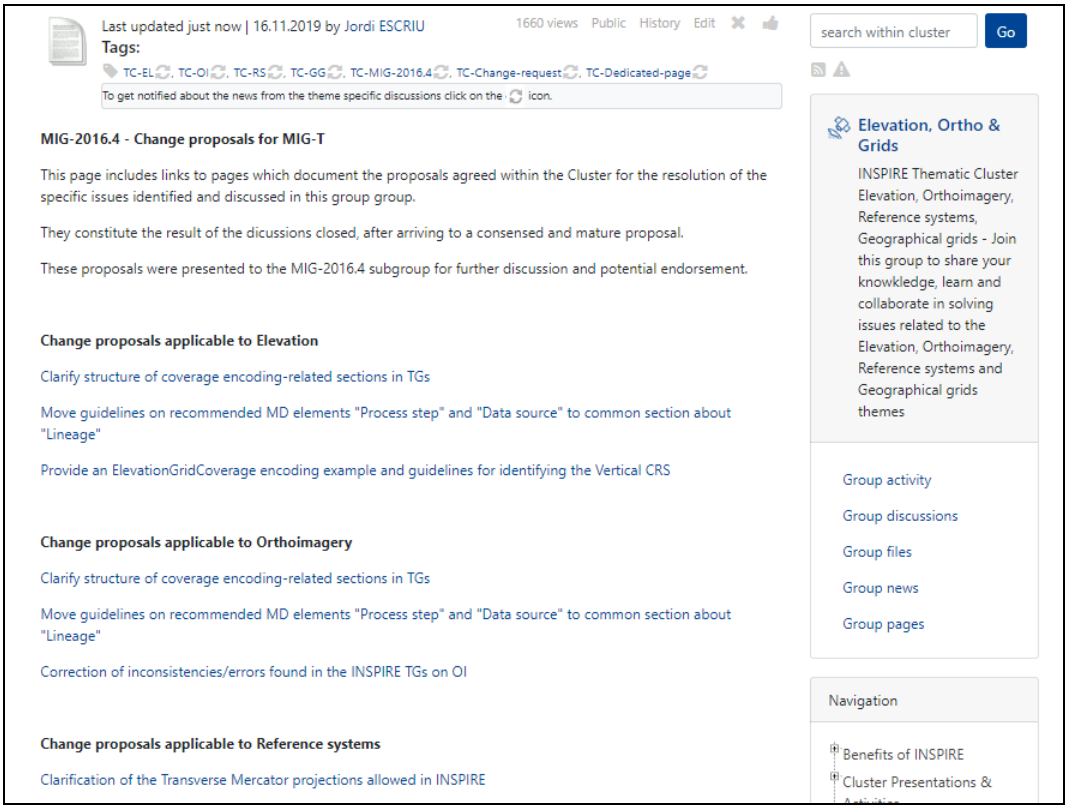
  - Workshop "Feel the power of INSPIRE WCS / WCPS in your hands" – INSPIRE Helsinki 2019

- EMODnet Bathymetry community



This key community has been contacted since 2018, but started to get reached from 2019, and increasingly in 2020 (see "*Overview of facilitator's work*" at the beginning of Section 2.1.4). There will be more contacts with this community during the upcoming INSPIRE Conference 2020 in Dubrovnik.

- MIG-2016.4 Change Proposals



It is expected to deliver more change proposals during 2020, mainly focus on clarifying the implementation of INSPIRE Elevation and Orthoimagery coverages.

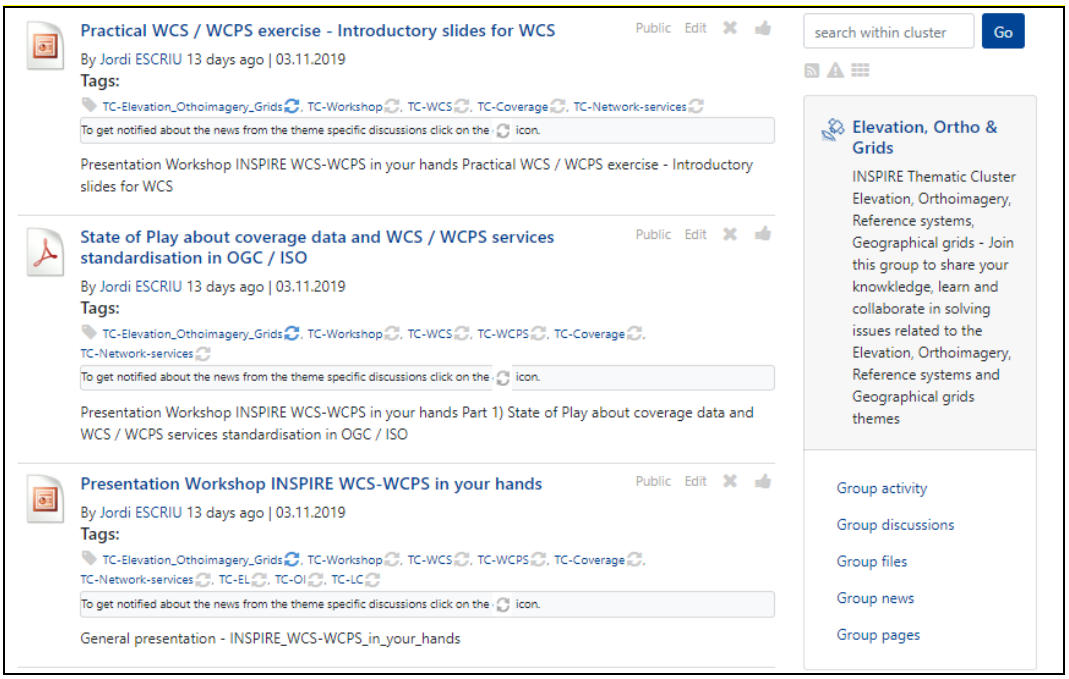
Files uploaded

Apart from linking external resources available on the Internet, the platform has the possibility to upload files to both, discussion topics and content pages.

In mid-April the *Elevation, Orthoimagery, Reference systems and Geographical grids* forum counts with a total of **86 files uploaded to the platform**.

Files are not often uploaded to the platform. Most materials have been linked to other platforms or sites, for example: the documents UNGGIM "Core Data Spatial theme Elevation - Recommendations for content" and UNGGIM "Core Data Spatial theme Orthoimagery - Recommendations for content", and the related templates for providing comments to these documents.

- Example Files:
  - Presentations from Workshop "Feel the power of INSPIRE WCS / WCPS in your hands"

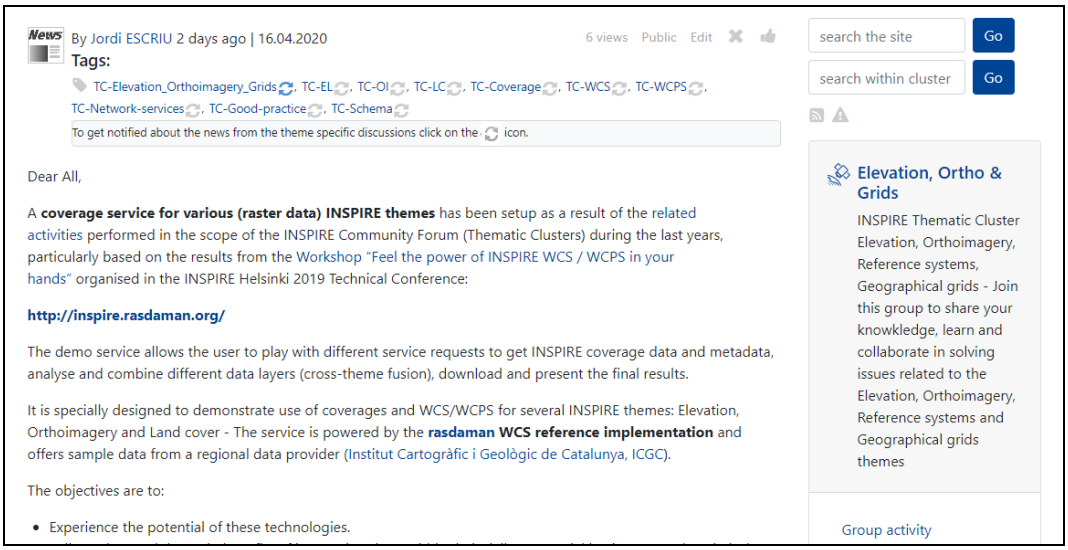


News items

News for the promotion of activities of the forum and related to the thematic areas in the scope has been published to a total of **48 news posts**.

- Example News Posts:

  - INSPIRE Coverages Demo Service - http://inspire.rasdaman.org/



News By Jordi ESCRIU 2 days ago | 16.04.2020 — 6 views Public Edit

Tags:

TC-Elevation_Orthoimagery_Grids, TC-EL, TC-OI, TC-LC, TC-Coverage, TC-WCS, TC-WCPS, TC-Network-services, TC-Good-practice, TC-Schema

To get notified about the news from the theme specific discussions click on the icon.

Dear All,

A **coverage service for various (raster data) INSPIRE themes** has been setup as a result of the related activities performed in the scope of the INSPIRE Community Forum (Thematic Clusters) during the last years, particularly based on the results from the Workshop "Feel the power of INSPIRE WCS / WCPS in your hands" organised in the INSPIRE Helsinki 2019 Technical Conference:

http://inspire.rasdaman.org/

The demo service allows the user to play with different service requests to get INSPIRE coverage data and metadata, analyse and combine different data layers (cross-theme fusion), download and present the final results.

It is specially designed to demonstrate use of coverages and WCS/WCPS for several INSPIRE themes: Elevation, Orthoimagery and Land cover - The service is powered by the **rasdaman WCS reference implementation** and offers sample data from a regional data provider (Institut Cartogràfic i Geològic de Catalunya, ICGC).

The objectives are to:

- Experience the potential of these technologies.

search the site Go

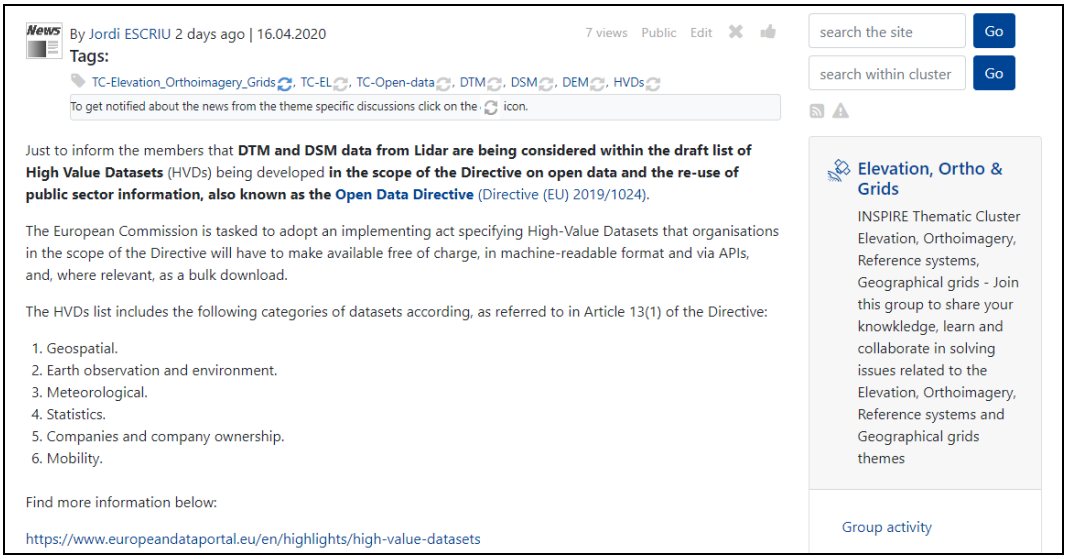
search within cluster Go

Elevation, Ortho & Grids

INSPIRE Thematic Cluster Elevation, Orthoimagery, Reference systems, Geographical grids - Join this group to share your knowkledge, learn and collaborate in solving issues related to the Elevation, Orthoimagery, Reference systems and Geographical grids themes

Group activity

  - DTM and DSM data from Lidar being considered within the draft list of High Value Datasets of the Open Data Directive



News By Jordi ESCRIU 2 days ago | 16.04.2020 — 7 views Public Edit

Tags:

TC-Elevation_Orthoimagery_Grids, TC-EL, TC-Open-data, DTM, DSM, DEM, HVDs

To get notified about the news from the theme specific discussions click on the icon.

Just to inform the members that **DTM and DSM data from Lidar are being considered within the draft list of High Value Datasets** (HVDs) being developed **in the scope of the Directive on open data and the re-use of public sector information, also known as the Open Data Directive** (Directive (EU) 2019/1024).

The European Commission is tasked to adopt an implementing act specifying High-Value Datasets that organisations in the scope of the Directive will have to make available free of charge, in machine-readable format and via APIs, and, where relevant, as a bulk download.

The HVDs list includes the following categories of datasets according, as referred to in Article 13(1) of the Directive:

1. Geospatial.
2. Earth observation and environment.
3. Meteorological.
4. Statistics.
5. Companies and company ownership.
6. Mobility.

Find more information below:

https://www.europeandataportal.eu/en/highlights/high-value-datasets

search the site Go

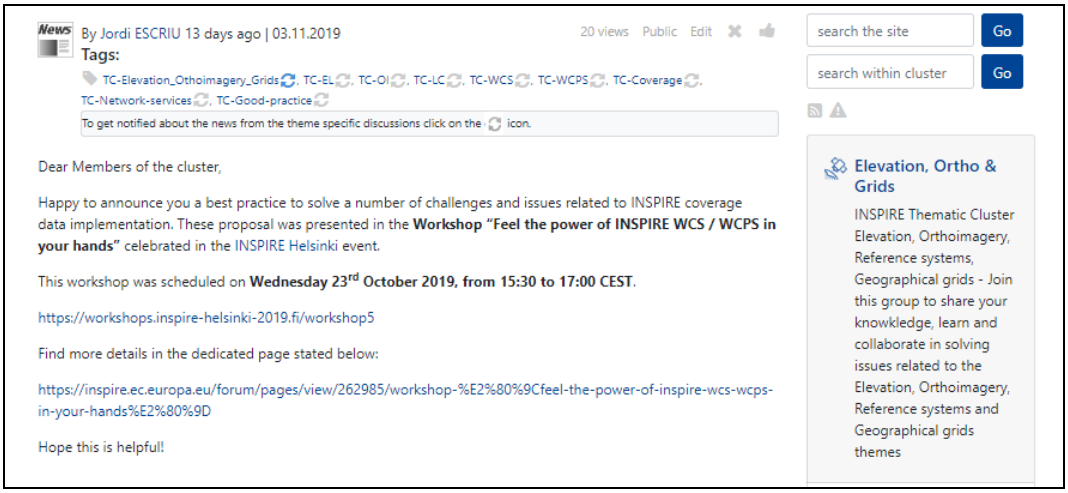
search within cluster Go

Elevation, Ortho & Grids

INSPIRE Thematic Cluster Elevation, Orthoimagery, Reference systems, Geographical grids - Join this group to share your knowkledge, learn and collaborate in solving issues related to the Elevation, Orthoimagery, Reference systems and Geographical grids themes

Group activity

- Workshop “Feel the power of INSPIRE WCS / WCPS in your hands”



News By Jordi ESCRIU 13 days ago | 03.11.2019 20 views Public Edit

Tags: TC-Elevation_Othoimagery_Grids, TC-EL, TC-OI, TC-LC, TC-WCS, TC-WCPS, TC-Coverage, TC-Network-services, TC-Good-practice

To get notified about the news from the theme specific discussions click on the icon.

Dear Members of the cluster,

Happy to announce you a best practice to solve a number of challenges and issues related to INSPIRE coverage data implementation. These proposal was presented in the **Workshop “Feel the power of INSPIRE WCS / WCPS in your hands”** celebrated in the INSPIRE Helsinki event.

This workshop was scheduled on **Wednesday 23rd October 2019, from 15:30 to 17:00 CEST**.

https://workshops.inspire-helsinki-2019.fi/workshop5

Find more details in the dedicated page stated below:

https://inspire.ec.europa.eu/forum/pages/view/262985/workshop-%E2%80%9Cfeel-the-power-of-inspire-wcs-wcps-in-your-hands%E2%80%9D

Hope this is helpful!

search the site Go

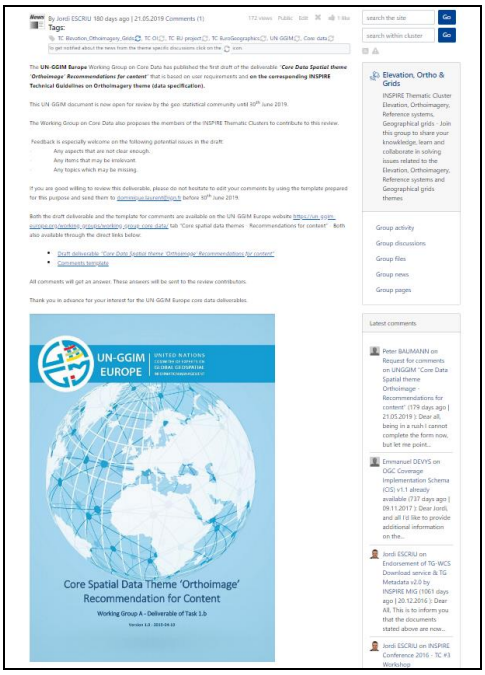
search within cluster Go

Elevation, Ortho & Grids

INSPIRE Thematic Cluster Elevation, Orthoimagery, Reference systems, Geographical grids - Join this group to share your knowledge, learn and collaborate in solving issues related to the Elevation, Orthoimagery, Reference systems and Geographical grids themes

- Request for comments on UNGGIM "Core Data Spatial theme Elevation - Recommendations for content” &

- Request for comments on UNGGIM "Core Data Spatial theme Orthoimagery - Recommendations for content”



2.1.4.3. Activity

The figures provided in this section correspond to the activity of the *Elevation, Orthoimagery, Reference systems & Geographical grids* forum platform in mid-April 2020, corresponding to Phase 1 of the INSPIRE Community Forum.

The **total number of replies** to discussion topics is **399** - This shows that the level of interaction of members is quite limited. This situation should be improved, by making promotion at the next INSPIRE Conference 2020 and by promoting posting of issues as discussion topics and provoking active participation of members in the threads.

More efforts have to be invested during the rest of 2020.

The **average number of replies per discussion is 6.1** – which represents almost the same level of interaction obtained at the end of 2019, where the average was 6.2.

However, the **total number of views** to discussion topics is **63508** - At the moment stakeholders and implementers are still focused on the implementation of Annex I data themes. They are mainly receiving the outcomes of "Elevation, Orthoimagery, Reference systems and Geographical grids" cluster activities, and will hopefully digest and apply them in the future for the implementation of the Elevation and the Orthoimagery themes.

2.2. Facilitator's activity in the INSPIRE Helsinki 2019 Technical Conference

The main contribution to the INSPIRE Helsinki 2019 Technical Conference was the *Workshop "Feel the power of INSPIRE WCS / WCPS in your hands"*, which took place on 23rd October, from 15:30 to 17:00 hours. The activity was developed in joint collaboration with Peter Baumann (Jacobs University / rasdaman GmbH - Bremen) and Kathi Schleidt (Data Cove E.U.).

The summary and agenda of this event may be reached through the workshop description available in the INSPIRE Helsinki 2019 website. Additionally, a dedicated page was published in the forum. The opportunity was leveraged to show all the work and progress related to the implementation of INSPIRE coverages, obtaining crucial outcomes for the forum:

a) Informing about the state of Play of coverage data and WCS / WCPS services standardisation in OGC / ISO, including the new OGC Open API - Coverages interface.

b) Informing about the state of Play of INSPIRE Coverages - OGC Compliant INSPIRE XSD coverage schemas.

c) Carry on a practical WCS / WCPS exercise using Elevation, Orthoimagery and Land cover geospatial data from a regional data provider on top of the rasdaman service engine.

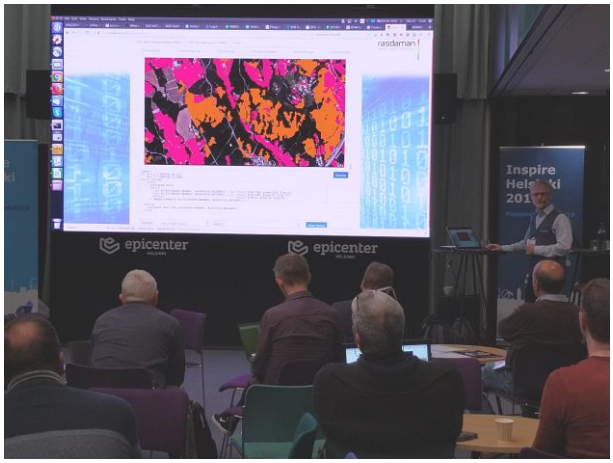
The exercise was based on a best practice proposal which counted with:

- Appropriate metadata schemas for providing the data identified as INSPIRE extensions on top of the standard OGC CIS v1.0 coverage data, in conformance to the INSPIRE Directive.

- Examples of INSPIRE compliant coverage metadata files for the themes referred above.

- Examples WCS and WCPS services based on the schemas and metadata examples previously mentioned.

During the practical exercise, the resources stated above were imported / used in the rasdaman engine in order to perform geospatial raster data, analysing and combining different data layers in order to obtain new results with the help of the WCPS processing service.



In summary, the practical exercise proposed as the central task of this workshop will allow the audience to experience the potential of these technologies and fully-understand the main benefits of integrating them within their daily geospatial businesses and analytical tasks.

All these outcomes have been published in a dedicated page in the Forum ("An effective good practice to boost interoperable provision of (raster) INSPIRE Coverage data and services" – see details in Section 2.1.3.2) and also in a separate website which offers the visitor the possibility to preproduce the practical exercise and examples delivered in the Helsinki 2019 workshop (website "*INSPIRE Coverages demystified*").

The second main activity during the Helsinki event was the participation in the Launch of the INSPIRE Community Forum platform, which took place on 23rd October, during the session from 13:30 to 15:00 hours. The facilitator participated in this session to show the new look and feel of the *Software & Tools* and the *Elevation, Orthoimagery, Reference systems and Geographical grids* forums, inviting the attendance to contribute to them and get involved in this activity.

Networking was additionally part of the tasks which were performed by the facilitator during the whole event, trying to engage relevant contacts which may deliver active participation and outcomes to the INSPIRE Community Forum.

Finally, the conference was also a nice opportunity to attend to technical workshops about relevant upcoming standards and software tools relevant to INSPIRE implementation, highlighting the INSPIRE, WFS3 and HALE Support in GeoServer: where are we? and the OGC API-Features: setting up enhanced usability for existing WFS services workshops, which took place on 23rd October 2019 morning.

2.3. Preparation of the INSPIRE Conference 2020 in Dubrovnik

One of the central tasks during the first triannual period of 2020 had been the organisation of the Forum activities for the INSPIRE Conference 2020, that should have taken place in Dubrovnik at the end of May.

However, as it the cases of practically all European activities foreseen this year, this crucial event for the INSPIRE community has had to be postponed due to the coronavirus pandemic crisis. The final dates for celebrating the conference are still to be determined at the date of issue of this report.

The following activities were organised and prepared by the facilitation of the *Software & Tools* and the *Elevation, Orthoimagery, Reference systems & Geographical grids* discussion group forums object of this report, and they were finally accepted by the INSPIRE Conference scientific committee:

- Special session "***INSPIRE Reference Data – Ready to take off?***".

  Accepted as a 'Special Session' (ID #192) - The abstract is available here:

  https://indico.unidu.hr/event/2/contributions/61/contribution.pdf

  This session is jointly organised with the Topographic, Cadastral and Reference data group of the INSPIRE Community Forum.

  It is mainly intended to provide a brushstroke not only about the whole status of INSPIRE implementation in the scope of topographic and cadastral data themes, including Elevation and Orthoimagery from Annex II, but also an update about some of the most utilised applications for implementing INSPIRE.

  Hence, a selection of both European data providers and software companies has been engaged for this purpose in this activity.

- Presentation "***Challenges in INSPIRE Reference data readiness across Europe***".

  Accepted as a 'Speed presentation' (ID #191), as part of the special session mentioned above - The abstract is available here:

  https://indico.unidu.hr/event/2/contributions/201/contribution.pdf

  This presentation is intended to open the session by exposing the state-of-the-art on the implementation of INSPIRE reference data across Europe, analysing fresh indicators gathered from the Thematic Viewer of the INSPIRE Geoportal describing the availability of both, as-is and interoperable data from the different Member States.

  As a result, a number of potential barriers preventing direct accessibility to Member States data thorough the INSPIRE Geoportal is expected to be analysed and discussed with the attendees by making a critical reflection.

  This analysis is supposed to be a continuation of the revision and assessment of the Elevation and Orthoimagery data sets offered through the INSPIRE Geoportal in the period from June 2018 to April 2020 included in this report (See Section 1.2.4), but extending the study to the whole 34 themes covered by the INSPIRE Directive.

  The results currently obtained for the Elevation and Orthoimagery themes may be accessed through the following discussion threads of the INSPIRE Community Forum:

  - Availability of Elevation data in the INSPIRE Thematic Viewer
  - Availability of Orthoimagery data in the INSPIRE Thematic Viewer

- Workshop "***INSPIRE Coverages, Demystified***".

  Accepted as a 'Workshop' (ID #85). - The abstract is available here:

  https://indico.unidu.hr/event/2/contributions/34/contribution.pdf

  This activity is proposed as a natural continuation of the activities to clarify and boost the interoperable provision of raster INSPIRE coverage data and services (See sections 2.1.3.2 and 2.1.4.2) that is considered as an INSPIRE good practice in this context.

  This event will be used for getting the community up to date with these on-going activities and particularly to inform about the status of the task for formally documenting this good practice for the future evaluation of MIG-T.

Due to the postponement of the INSPIRE Conference 2020, it is being currently studied the possibility of organizing some introductory webinars based on the previous activities initially planned for the conference.

See more details on the planification of activities In the scope of the *Software & Tools* and the *Elevation, Orthoimagery, Reference systems & Geographical grids* group forums for the rest of 2020 in Section 2.4.

All the mentioned activities will hopefully help in closing some of the discussion topics on encoding and implementation of INSPIRE coverages which are still on-going in the platform.

2.4. Forum activities planned till the end of 2020

Based on the planification and active presence initially foreseen for the INSPIRE 2020 Conference in Dubrovnik (see Section 2.3), postponed due to the coronavirus pandemic crisis, the following activities are currently being considered as an adaptation to this situation:

- **Online webinar based on the workshop "*INSPIRE Coverages, Demystified*"**.

  The webinar is expected to be celebrated during the same dates planned for the conference at the end of May. The event is co-organised and delivered by Peter Baumann (Jacobs University / rasdaman GmbH - Bremen), Kathi Schleidt (Data Cove E.U.) and the facilitator of the *Software & Tools* and the *Elevation, Orthoimagery, Reference systems & Geographical grids* group forums.

  The final schedule will be announced through the INSPIRE Community Forum with time enough in advance.

- Online webinar based on the "***INSPIRE Reference Data – Ready to take off?***" special session – TO BE CONFIRMED.

  This session was jointly organised with Anja Hopfstock, facilitator of the Topographic, Cadastral and Reference data group of the INSPIRE Community Forum.

  At the moment, the possibility of celebrating a webinar as a possible advance of the conference is being analysed.

  More information about this possibility will be shared with the community through the INSPIRE Community Forum.

And finally:

- **Active presence at the INSPIRE Conference 2020** (Dubrovnik).

  At the moment there are no new about the final dates of this event.

The activities of the *Software & Tools* and the *Elevation, Orthoimagery, Reference systems & Geographical grids* group forums will be reconsidered based on the initial conference plans and the online webinars effectively offered before the summer 2020.

Final activities organised for the conference will be used to progress on the INSPIRE implementation topics exposed in the this report.

3. FACILITATOR'S SUGGESTIONS FOR IMPROVEMENTS

This section provides a number of proposals for improving the generation of contents and for the promotion of the INSPIRE Community Forum platform by reaching new users.

They may be taken into consideration in an eventual continuation of the INSPIRE Community Forum activity.

3.1. Recommendations for the promotion of the platform

- Since the INSPIRE Conference 2020 has been postponed, the facilitators are considering organising online webinars in order to progress with some of the topics which were scheduled for the initial conference programme in May 2020.

  Such thematic webinars could be preceded by a general webinar, organized by the JRC in collaboration with the facilitators, in order to promote a wider use of the INSPIRE Community Forum platform.

  As a result of the application of the European General Data Protection Regulation (GDPR) to the platform, many members have stopped receiving notifications on the activity taking place in the groups being of their interest.

  If a new online launch is organised, many potential uses could be attending to the event and they could be offered a clear explanation about the need to configure their personal privacy and notification settings, and provide them some tips about the options that – if selected - may let them to receive the most of the information which is being published in the platform.

  As a general remark, the launch event scheduled during the last INSPIRE Helsinki 2019 Technical Conference was attended by a relatively small group of people.

3.2. Recommendations for the whole platform

All the recommendations stated in this section were already reported in the previous report, D1. They are submitted again for consideration since there has not been any discussion about its possible implementation.

- As already stated in the previous report (D1), provide the new INSPIRE Community Forum platform with a tool for calculating the basic statistics about a cluster or discussion group – as it was already implemented for the old INSPIRE Thematic Clusters platform:
  a) Number of members subscribed to the discussion group (discussion forum tag).
  b) Number of discussions topics, quantifying those open and closed.
  c) Number of pages.
  d) Number of special pages.
  e) Number of files uploaded.
  f) Number of news items.
- Revise the controlled tags applied to the platform.

  A number of tags starting with 'TC-' has been added in practice to the platform (either by facilitators or plain users) going beyond the last version of the agreed list of controlled tags (List of TAGS Version 0.5) without notice.

The list of additional 'TC-' tags applied to the platform is reported in Section A.2 of Annex ANNEX A., including a proposal of those tags that could be adopted in case of agreement between the facilitators, JRC and MIG-T Liaisons.

A discussion on this aspect is expected during the next period of the INSPIRE Community Forum. As a result of this discussion, potential 'TC-' tags adopted should be included in a new version of the agreed list of controlled tags (i.e. update the list).

Those 'TC-' tags not adopted should be replaced by normal tags (i.e. without 'TC-') in order to avoid both, use of controlled tags not-agreed and further confusion.

- Provide descriptions for existing agreed controlled tags, in other to implement tooltips when a user points with the mouse over the tags.

  The list of descriptions will be provided to JRC by the facilitator of the "SW & Tools" and "Elevation, Orthoimagery, Reference systems & Geographical grids" clusters – as he volunteered to do at the end of July 2019 - in an eventual continuation of the platform activity.

  This task has not been considered a priority. For convenience, the descriptions will be delivered when updating the list of controlled tags in virtue of the previous bullet.

- The use of controlled tags under the *Issue / Question status types* virtual view ('*TC-Open*', '*TC-Closed*', '*TC-On-going*') seems not clear to all facilitators.

  As stated in the previous report (D1), a new discussion is needed to agree on their meaning and harmonise their use. Otherwise, it would be better to remove these tags from the controlled tags list.

  The discussion could be hold together with the discussion about possible adoption of new controlled tags.

- A situation has been identified that may disorientate platform users: some platform discussion topics are missing specific posts and contributions when the user is logged out - Example: https://inspire.ec.europa.eu/forum/discussion/view/261239/implementation-spatial-scopepriority-datasets-codelists-in-geonetwork.

  The reason is that contributors who write such specific posts have chosen, in their personal privacy settings, to make their activity / contributions only visible to logged in users.

  While being straightforward from the privacy perspective, this is a relevant change from the original concept of the old INSPIRE Thematic Cluster platform, where all content were publicly available to anyone regardless their log status (members either logged in or logged out, or even people not registered to the platform – i.e. non-members), and they could only have the chance to participate in discussions (i.e. posts contents) when accessing as a logged in member.

  It is recommended to discuss with JRC and other facilitators if the current approach in the INSPIRE Community Forum is acceptable, or if there is any workaround to prevent users to get disorientated about missing contents (while being respectful to members privacy).

  As an illustration, there are currently two discussion topics in the *Elevation, Orthoimagery, Reference systems and Geographical grids* group that cannot be reached through the search tool available in the INSPIRE Community Forum website.

ANNEX A. Controlled Tags and its use in the platform

A.1 List of agreed Controlled Tags and its use in the platform

The table below shows the **List of TC Controlled Tags version 0.5** agreed between the JRC and the INSPIRE Community Forum facilitators in order to appropriately classify the contents in the platform.

Those tags highlighted in red in the table are not currently used in the INSPIRE Community Forum, which means there is no content published in the platform related to them, or this content is not appropriately identified.

Tag Classification (former Virtual Views)	Agreed TC-Controlled Tags
All INSPIRE Data Themes / TC Sub-groups	TC-AD, TC-AU, TC-CP, TC-RS, TC-GG, TC-GN, TC-HY, TC-PS, TC-TN, TC-EL, TC-GE, TC-LC, TC-OI, TC-AF, TC-AM, TC-AC, TC-BR, TC-BU, TC-ER, TC-EF, TC-HB, TC-HH, TC-LU, TC-MF, TC-MR, TC-NZ, TC-OF, TC-PD, TC-PF, TC-SR, TC-SO, TC-SD, TC-SU, TC-US
INSPIRE Data / Service types	TC-Reference-data, TC-O_M, TC-Coverage, TC-Vector, TC-Raster, TC-WCS, TC-WFS, TC-WMS, TC-WMTS, TC-CSW, TC-SOS, TC-Atom-feed, TC-WCPS
INSPIRE Components	TC-Data-specifications, TC-Network-services, TC-Metadata, TC-Monitoring-reporting, TC-Data-and-service-sharing
INSPIRE MIWP Actions	TC-MIG, TC-MIG-2016.4, TC-MIG-2016.5, TC-MIG-2017.1, TC-MIG-2017.2, TC-MIG-2017.3, TC-MIG-2017.4
ENV Domains	TC-Water, TC-Marine, TC-Biodiversity, TC-Air, TC-Waste, TC-Environmental-protection, TC-Noise, TC-Nature, TC-Industry, TC-Emission, TC-Groundwater, TC-Minerals
INSPIRE Knowledge Base Categories	TC-IKB, TC-IKB-Implement, TC-IKB-Participate, TC-IKB-Use, TC-IKB-Learn
Typology of posting issues	TC-Issue, TC-Bug, TC-Change-request, TC-Question, TC-Editorial-issue, TC-Dedicated-page
Typology of implementation examples	TC-Good-practice, TC-Reference-implementation, TC-Implementation-example, TC-Use-example, TC-Application, TC-SDI, TC-NSDI
Issue / Question status types	TC-Open, TC-Closed, TC-On-going
Data related categories	TC-SW-Tools, TC-IR, TC-TG, TC-Code-list, TC-Schema, TC-Encoding-rule, TC-Extension, TC-Validation, TC-Layer, TC-Portrayal, TC-Data-quality, TC-ATS, TC-ETS, TC-Standardization, TC-Data-production, TC-Data-transformation, TC-ETL, TC-Data-provision-distribution, TC-Data-harmonisation, TC-Data-interoperability, TC-Service-interoperability, TC-Data-licensing, TC-Data-modelling, TC-Registry
Typology of use	TC-Reporting, TC-Assessment, TC-EIA, TC-EU-dataset, TC-Pilot, TC-EU-project, TC-National-project, TC-Cross-border-project
Other EU relevant activities / Communities	TC-Copernicus, TC-OGC, TC-ISO, TC-ISO-TC211, TC-Eionet, TC-EMODNET, TC-EDP, TC-Open-data, TC-DSM, TC-Digital-government, TC-eGovernment, TC-Big-data, TC-Artificial-intelligence , TC-EuroGeographics, TC-EuroGeoSurveys, TC-EUROGI, TC-SMES-INSPIRE, TC-INSPIRE, TC-CLC+, TC-Statistics, TC-PSI, TC-eReporting, TC-Global-GGS, TC-DGGS

A.2 List of Non-Agreed 'TC-' tags used in the platform

A number of uncontrolled additional tags following the 'TC-' tag rule has been identified to be in use in the INSPIRE Community Forum platform.

Use of these tags have not been previously agreed between the JRC and the facilitators in order to appropriately classify the contents in the platform. They are enumerated below with the aim to decide on their agreement and adoption (add them to the list of controlled-tags), or its treatment as non 'TC-' tags, in upcoming teleconferences between the JRC and the facilitators.

Those tags highlighted in green in the table below are proposed to be agreed and adopted.

Tag Classification by initial letter	Non-agreed 'TC-' Tags used in the platform
A	TC-Activity-complex, TC-Apps, TC-AQD, TC-ArcGis
B	TC-Barriers
C	TC-Conformance, TC-Corrigendum, TC-Carbon-capture-storage, TC-Climate-change, TC-Copernicus-C3S, TC-Copernicus-CAMS
D	TC-Download-service, TC-Data-encoding, TC-Data-protection
E	TC-encoding, TC-Events, TC-European-Union-location-framework
F	TC-Fisheries, TC-FME
G	TC-GML, TC-Grids, TC-GIS
H	TC-HALE
I	TC-Inspire-conference, TC-Interoperability, TC-implementation, TC-IED, TC-INSPIRE-solution-pack, TC-IOT, TC-ISO-19115
J	TC-JSON, TC-JRC
K	TC-Klip
L	TC-Linked-data, TC-Land-monitoring, TC-Litter, TC-MIG-2019.2, TC-MIG-2018.1
M	TC-MSFD
N	
O	TC-Observation, TC-Out-of-band
P	TC-PRTR
Q	
R	TC-Referencing, TC-RESTful
S	TC-Scope, TC-SensorThings, TC-Semantics, TC-Survey
T	TC-TJS, TC-Timeseries, TC-Training
U	TC-US-GOVSERV, TC-UN-GGIM, TC-Urban-Audit, TC-URL, TC-US-EMF, TC-US-ETF, TC-Usability
V	
W	TC-Workshop, TC-Webinar, TC-Water-networks, TC-WPS

The tags proposed to be agreed and adopted could be classified according the following classification:

Tag Classification (former Virtual Views)	**Tags used in the platform proposed to be agreed and adopted as TC-Controlled Tags**
All INSPIRE Data Themes / TC Sub-groups	
INSPIRE Data / Service types	TC-RESTful, TC-TJS, TC-WPS
INSPIRE Components	
INSPIRE MIWP Actions	TC-MIG-2019.2, TC-MIG-2018.1,
ENV Domains	
INSPIRE Knowledge Base Categories	TC-Workshop, TC-Webinar, TC-Dedicated-page (move from Typology of posting issues)
Typology of posting issues	TC-Corrigendum
Typology of implementation examples	
Issue / Question status types	
Data related categories	TC-Interoperability, TC-Scope
Typology of use	
Other EU relevant activities / Communities	TC-Climate-change, TC-Data-protection (analyse its possible overlap with 'TC-EDP' already adopted), TC-IOT, TC-Linked-data, TC-UN-GGIM, TC-SensorThings