



INSPIRE Monitoring and Reporting 2023: Process, results and way forward

Jordi Escriu, Marco Minghini, Alexander Kotsev

77rd MIG-T meeting – February 23, 2024

Context

Context

Data-centric approach

- Ensuring that all possible resources are made **available** through Discovery services are counted
 - Implemented [Part 1. of data-service linking simplification](#)
- Towards a coordinated approach for HVD and INSPIRE implementation



This image was generated through AI.

Context

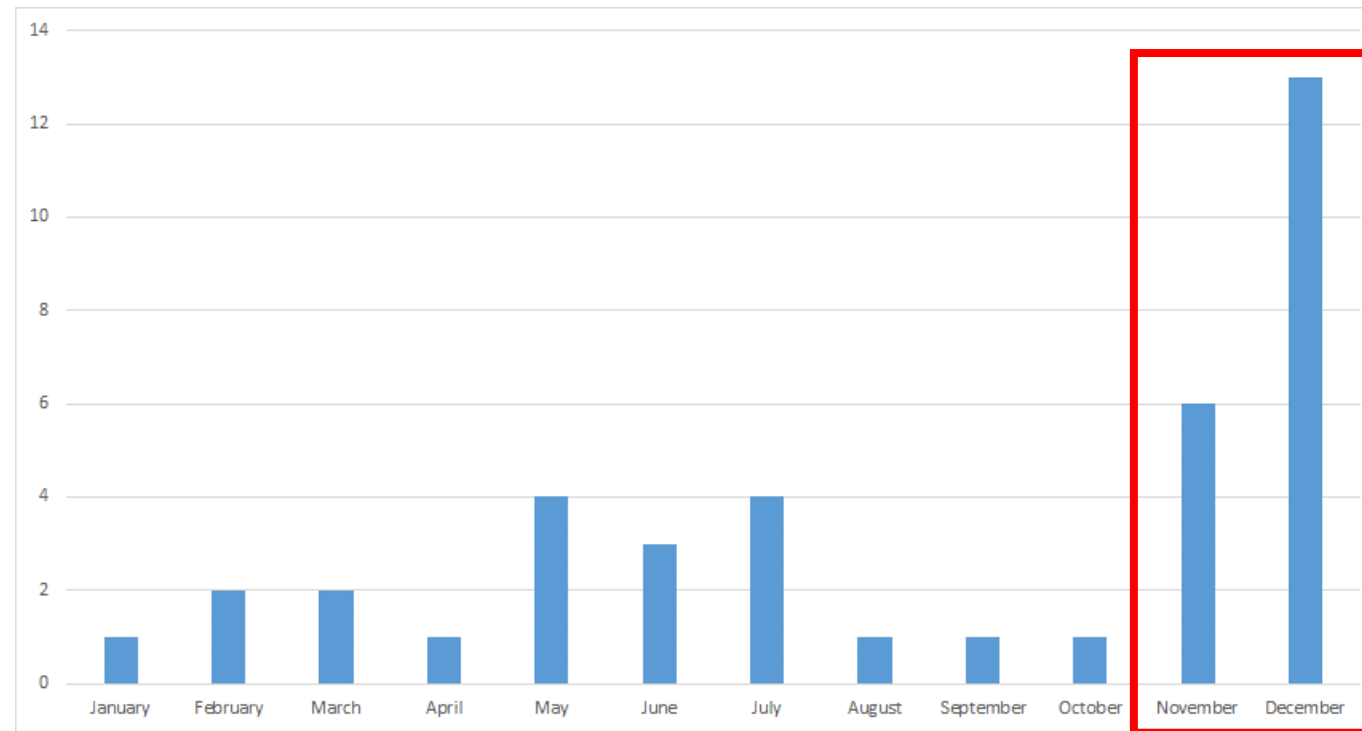


This image was generated through AI.

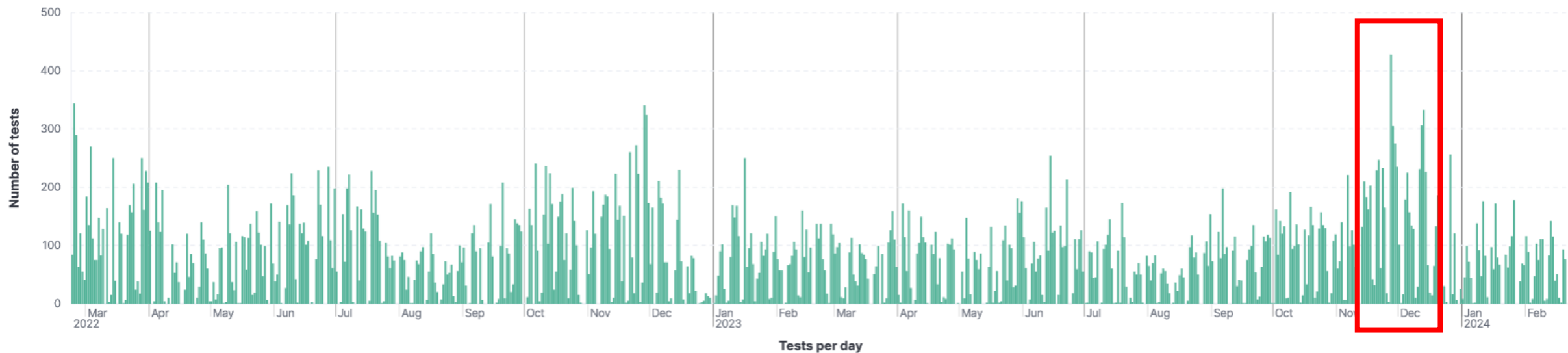
- **GeoNetwork** Open Source v.4 used for a 2nd consecutive year
- Successful harvest of all endpoints in December
 - High complexity
 - Different implementation approaches
 - Heavy processing burden

Context

- 39 issues opened in the **GPT** in 2023
- Tests run in the **INSPIRE Reference Validator**
 - clear peak in November and December 2023



Temporal evolution of the number of tests



Thank you 😊

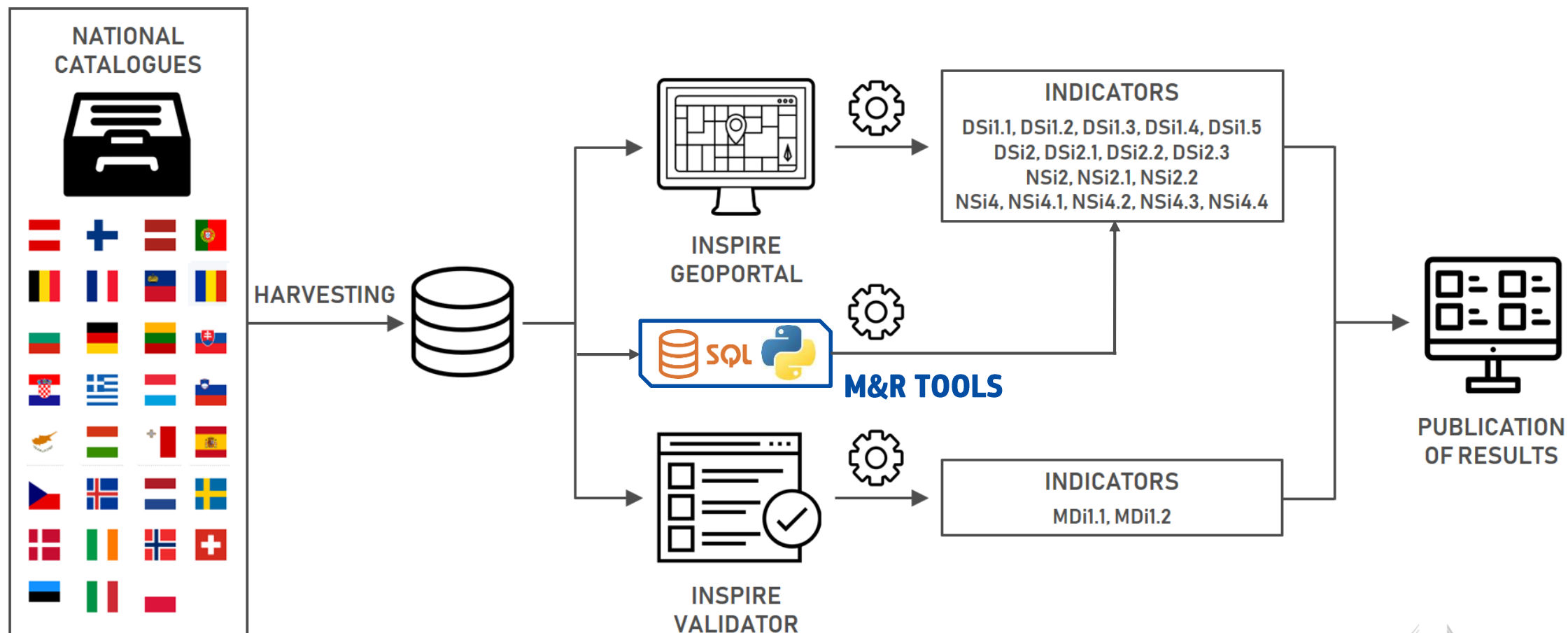
- Slovak colleagues
- Members of the data-service linking simplification sub-group
- All contributions and discussions on GitHub
- JRC T.1 ICT Pool
- Companies supporting the operation of the INSPIRE infrastructure



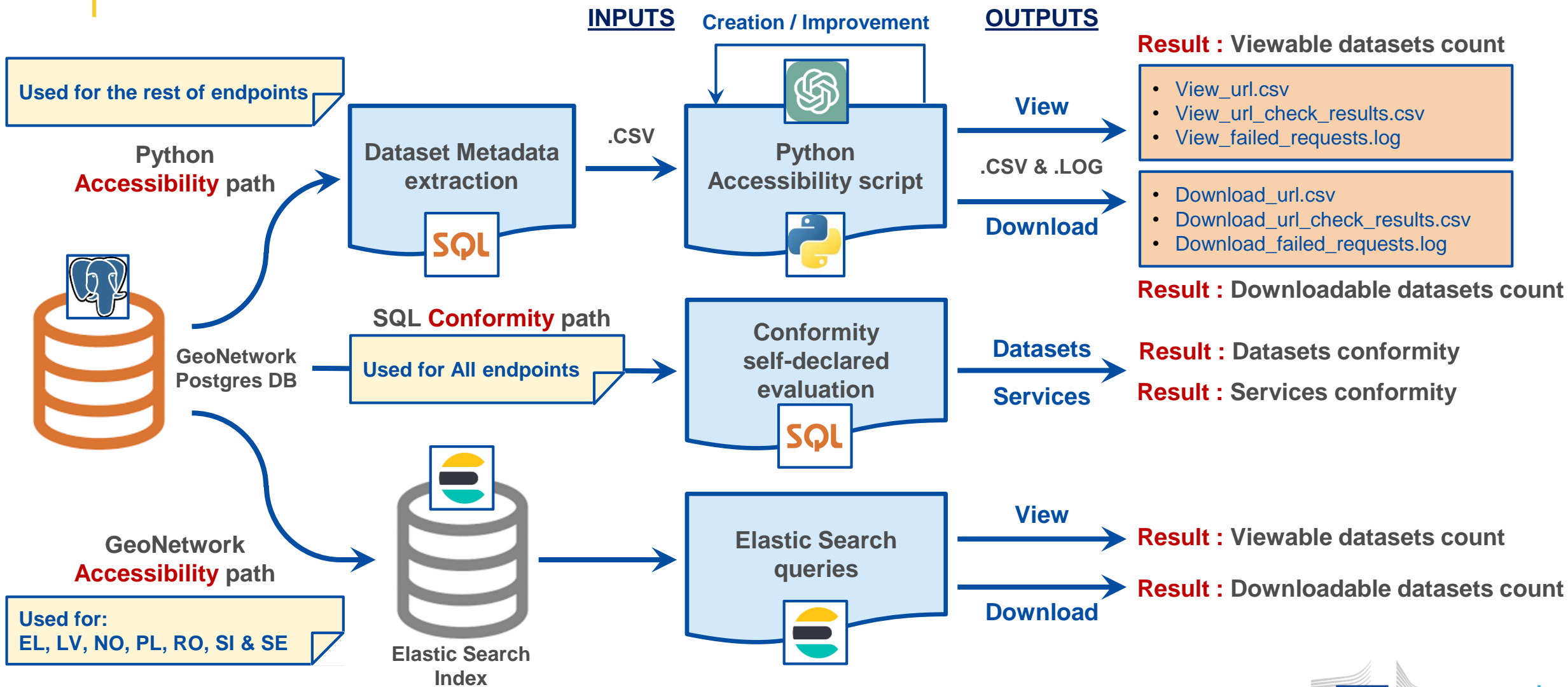
Methodology

Monitoring and Reporting 2023 – Process

- Overall process:



Monitoring and Reporting 2023 – Process



* M&R TOOLS code repository (SQL queries & Python scripts): <https://github.com/INSPIRE-MIF/mr-tools/>

Monitoring and Reporting 2023 – Software

The screenshot shows the 'My GeoNetwork catalogue' page for the European Commission. It features a map of Europe titled 'INSPIRE Data Sets - EU & EFTA Country overview'. To the right of the map, there are statistics for 'INSPIRE Geoportal Dataset Statistics': 93616 Metadata records, 12060 Downloadable Data Sets, and 49769 Viewable Data Sets. Below the map, there is a 'Select a COUNTRY' section with a grid of country flags and their corresponding data set counts.

| Country | Count |
|----------------|----------------------|
| Austria | 830 804 507 |
| Belgium | 517 402 478 |
| Bulgaria | 158 56 75 |
| Cyprus | 42 37 39 |
| Czech Republic | 65 44 58 |
| Germany | 80269 7393 44878 |
| Denmark | 204 94 99 |
| Estonia | 88 59 60 |
| Greece | 45 44 44 |
| Spain | 245 173 218 |
| Finland | 583 211 206 |
| France | 126 1 18 |
| Croatia | 134 44 89 |
| Hungary | 101 18 15 |
| Ireland | 96 62 92 |
| Iceland | 98 0 0 |
| Italy | 7447 490 802 |
| Lithuania | 95 95 60 |
| Luxembourg | 311 305 280 |
| Latvia | 156 88 93 |
| Malta | 150 143 148 |
| Netherlands | 206 120 133 |
| Poland | 152 99 96 |
| Portugal | 451 245 252 |
| Romania | 106 37 36 |
| Sweden | 248 218 213 |
| Slovenia | 91 49 92 |
| Slovakia | 272 118 178 |

- INSPIRE Geoportal based on GeoNetwork v.4.2.6

The screenshot shows a GitHub repository for 'INSPIRE Monitoring and Reporting Tools'. The repository is public and has 2 branches and 0 tags. It was last updated 1 hour ago with 9 commits. The repository contains several folders: 'dataset-accessibility', 'dataset-conformity', 'service-conformity', and 'README.md'. The README file is open, showing the title 'INSPIRE Monitoring and Reporting Tools' and a description: 'This repository includes some tools developed by the Joint Research Centre (JRC) to assist the INSPIRE Monitoring and Reporting (M&R) 2023 process. The tools can be used to calculate different families of Monitoring indicators, as defined in Commission Implementing Decision (EU) 2019/1372:'. Below the description, there are three bullet points listing the directories and their purposes.

- directory `dataset-accessibility`: includes two approaches (based on SQL queries and Python scripts) to calculate indicators NSi2, NSi2.1, NSi2.2
- directory `dataset-conformity`: includes an approach based on SQL queries to calculate indicators DSi2, DSi2.1, DSi2.2, DSi2.3
- directory `service-conformity`: includes an approach based on SQL queries to calculate indicators NSi4, NSi4.1, NSi4.2, NSi4.3, NSi4.4

- M&R Tools (released on 22/02/2024)

The screenshot shows the 'INSPIRE Validator - Test selection' interface. It is a web-based tool for testing INSPIRE resources. The interface includes a search bar, a navigation menu, and a 'Configure your test' section. The 'Configure your test' section has several options: 'Select the INSPIRE resource you would like to test' (with radio buttons for Metadata, View Service, Download Service, Discovery Service, and Data set), 'Select the Technical Guidelines version' (with radio buttons for Version 1.3 - DEPRECATED and Version 2.0), and 'Select the type of metadata record(s) to be tested' (with radio buttons for Data sets and data set series, Network Service, and Spatial Data Service). There is also an 'Advanced options' dropdown menu. Below the configuration options, there is a 'Provide the resource to test' section with a 'File upload' button and an 'Upload file*' section. The 'Upload file*' section includes a text input field for the file name and a 'Choose files' button. At the bottom, there is a 'Start test' button.

- INSPIRE Reference Validator v.2023.3 (released on 18/09/2023)
- Bulk validation tool v.2021.1.0 (released on 5/10/2021)

Results

Monitoring and Reporting 2022 – Indicators

- Indicators grouped into 5 categories:

- availability of spatial data and services

- DSi1.1, DSi1.2, DSi1.3, DSi1.4, DSi1.5

- conformity of metadata

- MDi1.1, MDi1.2

- conformity of spatial data sets

- DSi2, DSi2.1, DSi2.2, DSi2.3

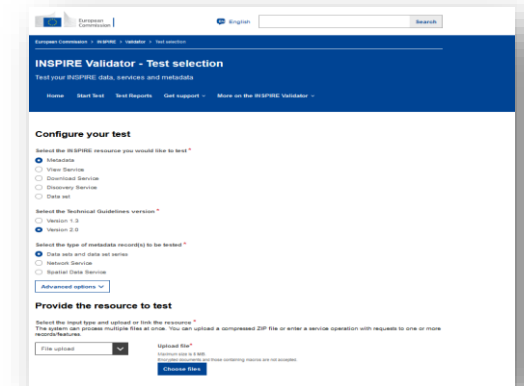
- accessibility of spatial data sets

- NSi2, NSi2.1, NSi2.2

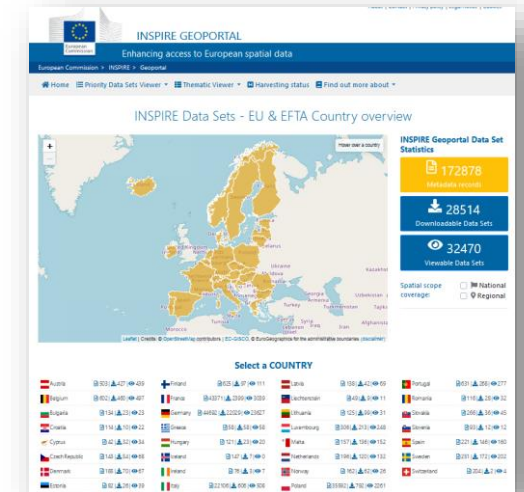
- conformity of network services

- NSi4, NSi4.1, NSi4.2, NSi4.3, NSi4.4

**INSPIRE
Reference
Validator**
(metadata
validation)



**INSPIRE
Geoportal +
M&R tools**
(linkages check)



Monitoring and Reporting 2022 – Indicators

- Indicators grouped into 5 categories:

- availability of spatial data and services

- DSi1.1, DSi1.2, DSi1.3, DSi1.4, DSi1.5

absolute values

- conformity of metadata

- MDi1.1, MDi1.2

- conformity of spatial data sets

- DSi2, DSi2.1, DSi2.2, DSi2.3

- accessibility of spatial data sets

- NSi2, NSi2.1, NSi2.2

- conformity of network services

- NSi4, NSi4.1, NSi4.2, NSi4.3, NSi4.4

relative values

(percentages)

Monitoring and Reporting 2023 – Results

- Median values of all indicators in the years 2019-2023:
 - overall: **slow but continuous improvement**

| YEAR | DSi2 | DSi2.1 | DSi2.2 | DSi2.3 |
|------|------|--------|--------|--------|
| 2019 | 38% | 73% | 33% | 35% |
| 2020 | 43% | 75% | 47% | 38% |
| 2021 | 70% | 87% | 67% | 62% |
| 2022 | 73% | 91% | 71% | 70% |
| 2023 | 61% | 68% | 58% | 59% |

conformity of spatial data sets

| YEAR | DSi1.1 | DSi1.2 | DSi1.3 | DSi1.4 | DSi1.5 |
|------|--------|--------|--------|--------|--------|
| 2019 | 164 | 142 | 47 | 0 | 74 |
| 2020 | 161 | 182 | 51 | 0 | 94 |
| 2021 | 167 | 192 | 55 | 2 | 109 |
| 2022 | 157 | 193 | 58 | 0 | 101 |
| 2023 | 158 | 205 | 49 | 0 | 100 |

availability of spatial data and services

calculated automatically (Geoportal + M&R Tools)

| YEAR | NSi2 | NSi2.1 | NSi2.2 |
|------|------|--------|--------|
| 2019 | 16% | 32% | 20% |
| 2020 | 32% | 44% | 42% |
| 2021 | 45% | 57% | 54% |
| 2022 | 50% | 62% | 56% |
| 2023 | 56% | 67% | 63% |

accessibility of spatial data sets

| YEAR | MDi1.1 | MDi1.2 |
|------|--------|--------|
| 2019 | 38% | 38% |
| 2020 | 55% | 67% |
| 2021 | 78% | 92% |
| 2022 | 89% | 90% |
| 2023 | 87% | 92% |

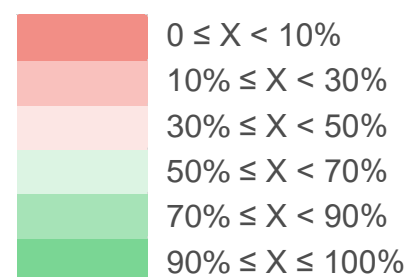
conformity of metadata

calculated automatically (Validator)

| YEAR | NSi4 | NSi4.1 | NSi4.2 | NSi4.3 | NSi4.4 |
|------|------|--------|--------|--------|--------|
| 2019 | 49% | 50% | 46% | 51% | 0% |
| 2020 | 71% | 67% | 67% | 83% | 0% |
| 2021 | 92% | 100% | 94% | 92% | 100% |
| 2022 | 92% | 100% | 93% | 91% | 0% |
| 2023 | 80% | 100% | 93% | 91% | 50% |

conformity of network services

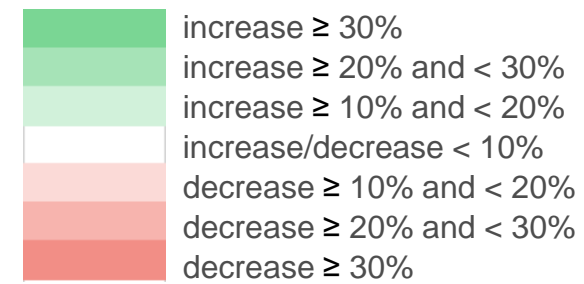
Overall results – 2023 performance



| country | DSi1.1 | DSi1.2 | DSi1.3 | DSi1.4 | DSi1.5 | MDi1.1 | MDi1.2 | DSi2 | DSi2.1 | DSi2.2 | DSi2.3 | NSi2 | NSi2.1 | NSi2.2 | NSi4 | NSi4.1 | NSi4.2 | NSi4.3 | NSi4.4 |
|---------|--------|--------|--------|--------|--------|--------|--------|------|--------|--------|--------|------|--------|--------|------|--------|--------|--------|--------|
| AT | 988 | 567 | 99 | 280 | 702 | 99% | 99% | 89% | 88% | 87% | 87% | 44% | 52% | 91% | 96% | 100% | 99% | 97% | #N/A |
| BE | 601 | 299 | 308 | 509 | 89 | 92% | 81% | 75% | 68% | 77% | 74% | 72% | 78% | 88% | 93% | 83% | 94% | 93% | #N/A |
| BG | 170 | 41 | 104 | 59 | 80 | 28% | 46% | 95% | 98% | 92% | 97% | 27% | 33% | 27% | 0% | 0% | 0% | 0% | #N/A |
| CH | 217 | 33 | 0 | 0 | 7 | 0% | 0% | 3% | 6% | 2% | 4% | 0% | 60% | 2% | 3% | #N/A | 100% | 0% | #N/A |
| CY | 43 | 60 | 10 | 0 | 0 | 0% | 0% | 2% | 0% | 25% | 0% | 98% | 98% | 100% | 0% | #N/A | 0% | 0% | #N/A |
| CZ | 90 | 183 | 33 | 12 | 78 | 90% | 98% | 47% | 57% | 53% | 47% | 92% | 96% | 96% | 97% | 100% | 97% | 97% | 100% |
| DE | 108521 | 187403 | 274 | 2721 | 245 | 74% | 79% | 61% | 53% | 52% | 53% | 65% | 72% | 67% | 99% | 100% | 99% | 99% | #N/A |
| DK | 194 | 247 | 59 | 0 | 190 | 59% | 93% | 63% | 100% | 71% | 47% | 52% | 71% | 54% | 91% | 100% | 91% | 91% | #N/A |
| EE | 91 | 117 | 25 | 0 | 91 | 97% | 96% | 56% | 80% | 58% | 58% | 74% | 77% | 76% | 91% | 100% | 90% | 91% | #N/A |
| EL | 45 | 102 | 43 | 0 | 45 | 100% | 100% | 100% | 100% | 100% | 100% | 98% | 98% | 100% | 0% | 0% | 0% | 0% | #N/A |
| ES | 285 | 379 | 78 | 44 | 220 | 92% | 94% | 47% | 63% | 54% | 47% | 84% | 97% | 85% | 96% | 100% | 97% | 92% | #N/A |
| FI | 457 | 209 | 34 | 239 | 104 | 97% | 100% | 25% | 25% | 23% | 39% | 34% | 55% | 47% | 53% | 100% | 57% | 52% | #N/A |
| FR | 200 | 25 | 151 | 0 | 170 | 3% | 60% | 77% | 100% | 76% | 74% | 19% | 37% | 60% | 16% | #N/A | 7% | 0% | #N/A |
| HR | 158 | 205 | 14 | 22 | 115 | 98% | 99% | 59% | 58% | 58% | 59% | 56% | 73% | 62% | 80% | 100% | 65% | 97% | #N/A |
| HU | 93 | 66 | 14 | 0 | 33 | 42% | 97% | 70% | 68% | 85% | 73% | 51% | 57% | 63% | 45% | 0% | 91% | 3% | #N/A |
| IE | 83 | 26 | 40 | 0 | 81 | 98% | 4% | 36% | 79% | 37% | 37% | 65% | 65% | 75% | 96% | 100% | 100% | 100% | #N/A |
| IS | 104 | 31 | 5 | 2 | 98 | 87% | 77% | 50% | 54% | 51% | 51% | 50% | 78% | 55% | 0% | #N/A | 0% | 0% | #N/A |
| IT | 8207 | 2454 | 744 | 4596 | 985 | 99% | 96% | 24% | 22% | 21% | 22% | 26% | 50% | 34% | 5% | 14% | 6% | 3% | 0% |
| LI | 81 | 4 | 0 | 0 | 62 | 77% | 25% | 7% | 7% | 8% | 3% | 0% | 1% | 0% | 25% | #N/A | 100% | 0% | #N/A |
| LT | 96 | 122 | 72 | 0 | 96 | 96% | 100% | 79% | 55% | 79% | 79% | 61% | 63% | 98% | 100% | 100% | 100% | 100% | #N/A |
| LU | 312 | 59 | 94 | 0 | 312 | 100% | 100% | 75% | 100% | 75% | 75% | 0% | 91% | 0% | 100% | 100% | 100% | 100% | #N/A |
| LV | 158 | 250 | 73 | 0 | 0 | 0% | 0% | 77% | 83% | 55% | 81% | 56% | 60% | 58% | 0% | #N/A | 0% | 0% | #N/A |
| MT | 151 | 298 | 26 | 0 | 126 | 100% | 100% | 99% | 99% | 99% | 99% | 80% | 98% | 85% | 100% | #N/A | 100% | 100% | #N/A |
| NL | 243 | 426 | 55 | 3 | 198 | 75% | 98% | 42% | 91% | 88% | 82% | 59% | 69% | 64% | 76% | 0% | 93% | 93% | #N/A |
| NO | 143 | 242 | 14 | 2 | 141 | 86% | 74% | 6% | 14% | 7% | 1% | 14% | 19% | 41% | 3% | 0% | 5% | 1% | #N/A |
| PL | 178 | 327 | 61 | 0 | 177 | 97% | 91% | 81% | 76% | 93% | 79% | 60% | 65% | 65% | 97% | 100% | 96% | 99% | #N/A |
| PT | 459 | 498 | 92 | 165 | 181 | 73% | 88% | 46% | 52% | 34% | 44% | 43% | 67% | 60% | 65% | #N/A | 73% | 54% | #N/A |
| RO | 115 | 94 | 37 | 15 | 100 | 57% | 95% | 45% | 100% | 33% | 100% | 38% | 38% | 39% | 91% | 100% | 98% | 93% | #N/A |
| SE | 250 | 228 | 67 | 0 | 240 | 84% | 92% | 100% | 100% | 100% | 100% | 83% | 87% | 88% | 100% | 100% | 100% | 100% | #N/A |
| SI | 82 | 129 | 9 | 0 | 82 | 77% | 91% | 81% | 100% | 53% | 44% | 46% | 67% | 52% | 100% | #N/A | 100% | 100% | #N/A |
| SK | 137 | 238 | 49 | 0 | 90 | 99% | 92% | 66% | 59% | 85% | 59% | 85% | 91% | 87% | 61% | #N/A | 65% | 63% | #N/A |

Absolute number indicators

Comparison vs. 2020, 2021, 2022



| country | DSi1.1 | DSi1.2 | DSi1.3 | DSi1.4 | DSi1.5 |
|---------|--------|--------|--------|--------|--------|
| AT | 988 | 567 | 99 | 280 | 702 |
| BE | 601 | 299 | 308 | 509 | 89 |
| BG | 170 | 41 | 104 | 59 | 80 |
| CH | 217 | 33 | 0 | 0 | 7 |
| CY | 43 | 60 | 10 | 0 | 0 |
| CZ | 90 | 183 | 33 | 12 | 78 |
| DE | 108521 | 187403 | 274 | 2721 | 245 |
| DK | 194 | 247 | 59 | 0 | 190 |
| EE | 91 | 117 | 25 | 0 | 91 |
| EL | 45 | 102 | 43 | 0 | 45 |
| ES | 285 | 379 | 78 | 44 | 220 |
| FI | 457 | 209 | 34 | 239 | 104 |
| FR | 200 | 25 | 151 | 0 | 170 |
| HR | 158 | 205 | 14 | 22 | 115 |
| HU | 93 | 66 | 14 | 0 | 33 |
| IE | 83 | 26 | 40 | 0 | 81 |
| IS | 104 | 31 | 5 | 2 | 98 |
| IT | 8207 | 2454 | 744 | 4596 | 985 |
| LI | 81 | 4 | 0 | 0 | 62 |
| LT | 96 | 122 | 72 | 0 | 96 |
| LU | 312 | 59 | 94 | 0 | 312 |
| LV | 158 | 250 | 73 | 0 | 0 |
| MT | 151 | 298 | 26 | 0 | 126 |
| NL | 243 | 426 | 55 | 3 | 198 |
| NO | 143 | 242 | 14 | 2 | 141 |
| PL | 178 | 327 | 61 | 0 | 177 |
| PT | 459 | 498 | 92 | 165 | 181 |
| RO | 115 | 94 | 37 | 15 | 100 |
| SE | 250 | 228 | 67 | 0 | 240 |
| SI | 82 | 129 | 9 | 0 | 82 |
| SK | 137 | 238 | 49 | 0 | 90 |

| country | DSi1.1 | DSi1.2 | DSi1.3 | DSi1.4 | DSi1.5 |
|---------|--------|--------|--------|--------|--------|
| AT | 988 | 567 | 99 | 280 | 702 |
| BE | 601 | 299 | 308 | 509 | 89 |
| BG | 170 | 41 | 104 | 59 | 80 |
| CH | 217 | 33 | 0 | 0 | 7 |
| CY | 43 | 60 | 10 | 0 | 0 |
| CZ | 90 | 183 | 33 | 12 | 78 |
| DE | 108521 | 187403 | 274 | 2721 | 245 |
| DK | 194 | 247 | 59 | 0 | 190 |
| EE | 91 | 117 | 25 | 0 | 91 |
| EL | 45 | 102 | 43 | 0 | 45 |
| ES | 285 | 379 | 78 | 44 | 220 |
| FI | 457 | 209 | 34 | 239 | 104 |
| FR | 200 | 25 | 151 | 0 | 170 |
| HR | 158 | 205 | 14 | 22 | 115 |
| HU | 93 | 66 | 14 | 0 | 33 |
| IE | 83 | 26 | 40 | 0 | 81 |
| IS | 104 | 31 | 5 | 2 | 98 |
| IT | 8207 | 2454 | 744 | 4596 | 985 |
| LI | 81 | 4 | 0 | 0 | 62 |
| LT | 96 | 122 | 72 | 0 | 96 |
| LU | 312 | 59 | 94 | 0 | 312 |
| LV | 158 | 250 | 73 | 0 | 0 |
| MT | 151 | 298 | 26 | 0 | 126 |
| NL | 243 | 426 | 55 | 3 | 198 |
| NO | 143 | 242 | 14 | 2 | 141 |
| PL | 178 | 327 | 61 | 0 | 177 |
| PT | 459 | 498 | 92 | 165 | 181 |
| RO | 115 | 94 | 37 | 15 | 100 |
| SE | 250 | 228 | 67 | 0 | 240 |
| SI | 82 | 129 | 9 | 0 | 82 |
| SK | 137 | 238 | 49 | 0 | 90 |

| country | DSi1.1 | DSi1.2 | DSi1.3 | DSi1.4 | DSi1.5 |
|---------|--------|--------|--------|--------|--------|
| AT | 988 | 567 | 99 | 280 | 702 |
| BE | 601 | 299 | 308 | 509 | 89 |
| BG | 170 | 41 | 104 | 59 | 80 |
| CH | 217 | 33 | 0 | 0 | 7 |
| CY | 43 | 60 | 10 | 0 | 0 |
| CZ | 90 | 183 | 33 | 12 | 78 |
| DE | 108521 | 187403 | 274 | 2721 | 245 |
| DK | 194 | 247 | 59 | 0 | 190 |
| EE | 91 | 117 | 25 | 0 | 91 |
| EL | 45 | 102 | 43 | 0 | 45 |
| ES | 285 | 379 | 78 | 44 | 220 |
| FI | 457 | 209 | 34 | 239 | 104 |
| FR | 200 | 25 | 151 | 0 | 170 |
| HR | 158 | 205 | 14 | 22 | 115 |
| HU | 93 | 66 | 14 | 0 | 33 |
| IE | 83 | 26 | 40 | 0 | 81 |
| IS | 104 | 31 | 5 | 2 | 98 |
| IT | 8207 | 2454 | 744 | 4596 | 985 |
| LI | 81 | 4 | 0 | 0 | 62 |
| LT | 96 | 122 | 72 | 0 | 96 |
| LU | 312 | 59 | 94 | 0 | 312 |
| LV | 158 | 250 | 73 | 0 | 0 |
| MT | 151 | 298 | 26 | 0 | 126 |
| NL | 243 | 426 | 55 | 3 | 198 |
| NO | 143 | 242 | 14 | 2 | 141 |
| PL | 178 | 327 | 61 | 0 | 177 |
| PT | 459 | 498 | 92 | 165 | 181 |
| RO | 115 | 94 | 37 | 15 | 100 |
| SE | 250 | 228 | 67 | 0 | 240 |
| SI | 82 | 129 | 9 | 0 | 82 |
| SK | 137 | 238 | 49 | 0 | 90 |

Relative number indicators Comparison vs. 2022

increase of more than 10 percentage points compared to 2022
 increase/decrease of less than 10 percentage points compared to 2022
 decrease of more than 10 percentage points compared to 2022

| country | MDi1.1 | MDi1.2 | DSi2 | DSi2.1 | DSi2.2 | DSi2.3 | NSi2 | NSi2.1 | NSi2.2 | NSi4 | NSi4.1 | NSi4.2 | NSi4.3 | NSi4.4 |
|---------|--------|--------|------|--------|--------|--------|------|--------|--------|------|--------|--------|--------|--------|
| AT | 99% | 99% | 89% | 88% | 87% | 87% | 44% | 52% | 91% | 96% | 100% | 99% | 97% | #N/A |
| BE | 92% | 81% | 75% | 68% | 77% | 74% | 72% | 78% | 88% | 93% | 83% | 94% | 93% | #N/A |
| BG | 28% | 46% | 95% | 98% | 92% | 97% | 27% | 33% | 27% | 0% | 0% | 0% | 0% | #N/A |
| CH | 0% | 0% | 3% | 6% | 2% | 4% | 0% | 60% | 2% | 3% | #N/A | 100% | 0% | #N/A |
| CY | 0% | 0% | 2% | 0% | 25% | 0% | 98% | 98% | 100% | 0% | #N/A | 0% | 0% | #N/A |
| CZ | 90% | 98% | 47% | 57% | 53% | 47% | 92% | 96% | 96% | 97% | 100% | 97% | 97% | 100% |
| DE | 74% | 79% | 61% | 53% | 52% | 53% | 65% | 72% | 67% | 99% | 100% | 99% | 99% | #N/A |
| DK | 59% | 93% | 63% | 100% | 71% | 47% | 52% | 71% | 54% | 91% | 100% | 91% | 91% | #N/A |
| EE | 97% | 96% | 56% | 80% | 58% | 58% | 74% | 77% | 76% | 91% | 100% | 90% | 91% | #N/A |
| EL | 100% | 100% | 100% | 100% | 100% | 100% | 98% | 98% | 100% | 0% | 0% | 0% | 0% | #N/A |
| ES | 92% | 94% | 47% | 63% | 54% | 47% | 84% | 97% | 85% | 96% | 100% | 97% | 92% | #N/A |
| FI | 97% | 100% | 25% | 25% | 23% | 39% | 34% | 55% | 47% | 53% | 100% | 57% | 52% | #N/A |
| FR | 3% | 60% | 77% | 100% | 76% | 74% | 19% | 37% | 60% | 16% | #N/A | 7% | 0% | #N/A |
| HR | 98% | 99% | 59% | 58% | 58% | 59% | 56% | 73% | 62% | 80% | 100% | 65% | 97% | #N/A |
| HU | 42% | 97% | 70% | 68% | 85% | 73% | 51% | 57% | 63% | 45% | 0% | 91% | 3% | #N/A |
| IE | 98% | 4% | 36% | 79% | 37% | 37% | 65% | 65% | 75% | 96% | 100% | 100% | 100% | #N/A |
| IS | 87% | 77% | 50% | 54% | 51% | 51% | 50% | 78% | 55% | 0% | #N/A | 0% | 0% | #N/A |
| IT | 99% | 96% | 24% | 22% | 21% | 22% | 26% | 50% | 34% | 5% | 14% | 6% | 3% | 0% |
| LI | 77% | 25% | 7% | 7% | 8% | 3% | 0% | 1% | 0% | 25% | #N/A | 100% | 0% | #N/A |
| LT | 96% | 100% | 79% | 55% | 79% | 79% | 61% | 63% | 98% | 100% | 100% | 100% | 100% | #N/A |
| LU | 100% | 100% | 75% | 100% | 75% | 75% | 0% | 91% | 0% | 100% | 100% | 100% | 100% | #N/A |
| LV | 0% | 0% | 77% | 83% | 55% | 81% | 56% | 60% | 58% | 0% | #N/A | 0% | 0% | #N/A |
| MT | 100% | 100% | 99% | 99% | 99% | 99% | 80% | 98% | 85% | 100% | #N/A | 100% | 100% | #N/A |
| NL | 75% | 98% | 42% | 91% | 88% | 82% | 59% | 69% | 64% | 76% | 0% | 93% | 93% | #N/A |
| NO | 86% | 74% | 6% | 14% | 7% | 1% | 14% | 19% | 41% | 3% | 0% | 5% | 1% | #N/A |
| PL | 97% | 91% | 81% | 76% | 93% | 79% | 60% | 65% | 65% | 97% | 100% | 96% | 99% | #N/A |
| PT | 73% | 88% | 46% | 52% | 34% | 44% | 43% | 67% | 60% | 65% | #N/A | 73% | 54% | #N/A |
| RO | 57% | 95% | 45% | 100% | 33% | 100% | 38% | 38% | 39% | 91% | 100% | 98% | 93% | #N/A |
| SE | 84% | 92% | 100% | 100% | 100% | 100% | 83% | 87% | 88% | 100% | 100% | 100% | 100% | #N/A |
| SI | 77% | 91% | 81% | 100% | 53% | 44% | 46% | 67% | 52% | 100% | #N/A | 100% | 100% | #N/A |
| SK | 99% | 92% | 66% | 59% | 85% | 59% | 85% | 91% | 87% | 61% | #N/A | 65% | 63% | #N/A |

Relative number indicators Comparison vs. 2021

increase of more than 10 percentage points compared to 2021
 increase/decrease of less than 10 percentage points compared to 2021
 decrease of more than 10 percentage points compared to 2021

| country | MDi1.1 | MDi1.2 | DSi2 | DSi2.1 | DSi2.2 | DSi2.3 | NSi2 | NSi2.1 | NSi2.2 | NSi4 | NSi4.1 | NSi4.2 | NSi4.3 | NSi4.4 |
|---------|--------|--------|------|--------|--------|--------|------|--------|--------|------|--------|--------|--------|--------|
| AT | 99% | 99% | 89% | 88% | 87% | 87% | 44% | 52% | 91% | 96% | 100% | 99% | 97% | #N/A |
| BE | 92% | 81% | 75% | 68% | 77% | 74% | 72% | 78% | 88% | 93% | 83% | 94% | 93% | #N/A |
| BG | 28% | 46% | 95% | 98% | 92% | 97% | 27% | 33% | 27% | 0% | 0% | 0% | 0% | #N/A |
| CH | 0% | 0% | 3% | 6% | 2% | 4% | 0% | 60% | 2% | 3% | #N/A | 100% | 0% | #N/A |
| CY | 0% | 0% | 2% | 0% | 25% | 0% | 98% | 98% | 100% | 0% | #N/A | 0% | 0% | #N/A |
| CZ | 90% | 98% | 47% | 57% | 53% | 47% | 92% | 96% | 96% | 97% | 100% | 97% | 97% | 100% |
| DE | 74% | 79% | 61% | 53% | 52% | 53% | 65% | 72% | 67% | 99% | 100% | 99% | 99% | #N/A |
| DK | 59% | 93% | 63% | 100% | 71% | 47% | 52% | 71% | 54% | 91% | 100% | 91% | 91% | #N/A |
| EE | 97% | 96% | 56% | 80% | 58% | 58% | 74% | 77% | 76% | 91% | 100% | 90% | 91% | #N/A |
| EL | 100% | 100% | 100% | 100% | 100% | 100% | 98% | 98% | 100% | 0% | 0% | 0% | 0% | #N/A |
| ES | 92% | 94% | 47% | 63% | 54% | 47% | 84% | 97% | 85% | 96% | 100% | 97% | 92% | #N/A |
| FI | 97% | 100% | 25% | 25% | 23% | 39% | 34% | 55% | 47% | 53% | 100% | 57% | 52% | #N/A |
| FR | 3% | 60% | 77% | 100% | 76% | 74% | 19% | 37% | 60% | 16% | #N/A | 7% | 0% | #N/A |
| HR | 98% | 99% | 59% | 58% | 58% | 59% | 56% | 73% | 62% | 80% | 100% | 65% | 97% | #N/A |
| HU | 42% | 97% | 70% | 68% | 85% | 73% | 51% | 57% | 63% | 45% | 0% | 91% | 3% | #N/A |
| IE | 98% | 4% | 36% | 79% | 37% | 37% | 65% | 65% | 75% | 96% | 100% | 100% | 100% | #N/A |
| IS | 87% | 77% | 50% | 54% | 51% | 51% | 50% | 78% | 55% | 0% | #N/A | 0% | 0% | #N/A |
| IT | 99% | 96% | 24% | 22% | 21% | 22% | 26% | 50% | 34% | 5% | 14% | 6% | 3% | 0% |
| LI | 77% | 25% | 7% | 7% | 8% | 3% | 0% | 1% | 0% | 25% | #N/A | 100% | 0% | #N/A |
| LT | 96% | 100% | 79% | 55% | 79% | 79% | 61% | 63% | 98% | 100% | 100% | 100% | 100% | #N/A |
| LU | 100% | 100% | 75% | 100% | 75% | 75% | 0% | 91% | 0% | 100% | 100% | 100% | 100% | #N/A |
| LV | 0% | 0% | 77% | 83% | 55% | 81% | 56% | 60% | 58% | 0% | #N/A | 0% | 0% | #N/A |
| MT | 100% | 100% | 99% | 99% | 99% | 99% | 80% | 98% | 85% | 100% | #N/A | 100% | 100% | #N/A |
| NL | 75% | 98% | 42% | 91% | 88% | 82% | 59% | 69% | 64% | 76% | 0% | 93% | 93% | #N/A |
| NO | 86% | 74% | 6% | 14% | 7% | 1% | 14% | 19% | 41% | 3% | 0% | 5% | 1% | #N/A |
| PL | 97% | 91% | 81% | 76% | 93% | 79% | 60% | 65% | 65% | 97% | 100% | 96% | 99% | #N/A |
| PT | 73% | 88% | 46% | 52% | 34% | 44% | 43% | 67% | 60% | 65% | #N/A | 73% | 54% | #N/A |
| RO | 57% | 95% | 45% | 100% | 33% | 100% | 38% | 38% | 39% | 91% | 100% | 98% | 93% | #N/A |
| SE | 84% | 92% | 100% | 100% | 100% | 100% | 83% | 87% | 88% | 100% | 100% | 100% | 100% | #N/A |
| SI | 77% | 91% | 81% | 100% | 53% | 44% | 46% | 67% | 52% | 100% | #N/A | 100% | 100% | #N/A |
| SK | 99% | 92% | 66% | 59% | 85% | 59% | 85% | 91% | 87% | 61% | #N/A | 65% | 63% | #N/A |

Relative number indicators Comparison vs. 2020

increase of more than 10 percentage points compared to 2020
 increase/decrease of less than 10 percentage points compared to 2020
 decrease of more than 10 percentage points compared to 2020

| country | MDi1.1 | MDi1.2 | DSi2 | DSi2.1 | DSi2.2 | DSi2.3 | NSi2 | NSi2.1 | NSi2.2 | NSi4 | NSi4.1 | NSi4.2 | NSi4.3 | NSi4.4 |
|---------|--------|--------|------|--------|--------|--------|------|--------|--------|------|--------|--------|--------|--------|
| AT | 99% | 99% | 89% | 88% | 87% | 87% | 44% | 52% | 91% | 96% | 100% | 99% | 97% | #N/A |
| BE | 92% | 81% | 75% | 68% | 77% | 74% | 72% | 78% | 88% | 93% | 83% | 94% | 93% | #N/A |
| BG | 28% | 46% | 95% | 98% | 92% | 97% | 27% | 33% | 27% | 0% | 0% | 0% | 0% | #N/A |
| CH | 0% | 0% | 3% | 6% | 2% | 4% | 0% | 60% | 2% | 3% | #N/A | 100% | 0% | #N/A |
| CY | 0% | 0% | 2% | 0% | 25% | 0% | 98% | 98% | 100% | 0% | #N/A | 0% | 0% | #N/A |
| CZ | 90% | 98% | 47% | 57% | 53% | 47% | 92% | 96% | 96% | 97% | 100% | 97% | 97% | 100% |
| DE | 74% | 79% | 61% | 53% | 52% | 53% | 65% | 72% | 67% | 99% | 100% | 99% | 99% | #N/A |
| DK | 59% | 93% | 63% | 100% | 71% | 47% | 52% | 71% | 54% | 91% | 100% | 91% | 91% | #N/A |
| EE | 97% | 96% | 56% | 80% | 58% | 58% | 74% | 77% | 76% | 91% | 100% | 90% | 91% | #N/A |
| EL | 100% | 100% | 100% | 100% | 100% | 100% | 98% | 98% | 100% | 0% | 0% | 0% | 0% | #N/A |
| ES | 92% | 94% | 47% | 63% | 54% | 47% | 84% | 97% | 85% | 96% | 100% | 97% | 92% | #N/A |
| FI | 97% | 100% | 25% | 25% | 23% | 39% | 34% | 55% | 47% | 53% | 100% | 57% | 52% | #N/A |
| FR | 3% | 60% | 77% | 100% | 76% | 74% | 19% | 37% | 60% | 16% | #N/A | 7% | 0% | #N/A |
| HR | 98% | 99% | 59% | 58% | 58% | 59% | 56% | 73% | 62% | 80% | 100% | 65% | 97% | #N/A |
| HU | 42% | 97% | 70% | 68% | 85% | 73% | 51% | 57% | 63% | 45% | 0% | 91% | 3% | #N/A |
| IE | 98% | 4% | 36% | 79% | 37% | 37% | 65% | 65% | 75% | 96% | 100% | 100% | 100% | #N/A |
| IS | 87% | 77% | 50% | 54% | 51% | 51% | 50% | 78% | 55% | 0% | #N/A | 0% | 0% | #N/A |
| IT | 99% | 96% | 24% | 22% | 21% | 22% | 26% | 50% | 34% | 5% | 14% | 6% | 3% | 0% |
| LI | 77% | 25% | 7% | 7% | 8% | 3% | 0% | 1% | 0% | 25% | #N/A | 100% | 0% | #N/A |
| LT | 96% | 100% | 79% | 55% | 79% | 79% | 61% | 63% | 98% | 100% | 100% | 100% | 100% | #N/A |
| LU | 100% | 100% | 75% | 100% | 75% | 75% | 0% | 91% | 0% | 100% | 100% | 100% | 100% | #N/A |
| LV | 0% | 0% | 77% | 83% | 55% | 81% | 56% | 60% | 58% | 0% | #N/A | 0% | 0% | #N/A |
| MT | 100% | 100% | 99% | 99% | 99% | 99% | 80% | 98% | 85% | 100% | #N/A | 100% | 100% | #N/A |
| NL | 75% | 98% | 42% | 91% | 88% | 82% | 59% | 69% | 64% | 76% | 0% | 93% | 93% | #N/A |
| NO | 86% | 74% | 6% | 14% | 7% | 1% | 14% | 19% | 41% | 3% | 0% | 5% | 1% | #N/A |
| PL | 97% | 91% | 81% | 76% | 93% | 79% | 60% | 65% | 65% | 97% | 100% | 96% | 99% | #N/A |
| PT | 73% | 88% | 46% | 52% | 34% | 44% | 43% | 67% | 60% | 65% | #N/A | 73% | 54% | #N/A |
| RO | 57% | 95% | 45% | 100% | 33% | 100% | 38% | 38% | 39% | 91% | 100% | 98% | 93% | #N/A |
| SE | 84% | 92% | 100% | 100% | 100% | 100% | 83% | 87% | 88% | 100% | 100% | 100% | 100% | #N/A |
| SI | 77% | 91% | 81% | 100% | 53% | 44% | 46% | 67% | 52% | 100% | #N/A | 100% | 100% | #N/A |
| SK | 99% | 92% | 66% | 59% | 85% | 59% | 85% | 91% | 87% | 61% | #N/A | 65% | 63% | #N/A |

Monitoring and Reporting 2023 – Dashboard

- Landing page:
 - number of data sets, data set series & services for all countries
 - documentation to help understand the results



<https://europa.eu/!Vcdmwv>

Monitoring and Reporting 2023 – Dashboard

- Country-specific page:
 - overview statistics: number of data sets, data set series & services, number of conformant & non conformant metadata
 - values of Monitoring and Reporting 2023 indicators

<https://europa.eu/!Vcdmwv>

Poland

85a23ec3-62d5-4c15-875d-b6802485b629

MD Catalogue URL: <http://mapy.geoportal.gov.pl/wss/service/CSWINSP/guest/CSWStartup>

Endpoint ID: 85a23ec3-62d5-4c15-875d-b6802485b629

The date of harvest metadata: 2022-12-16, 20:41:11

Overview statistics of the harvested metadata

Dataset: 152

Series: 4

Services: 258

Results of evaluation using [INSPIRE Reference Validator](#)

Metadata Dataset

Conformant: 155

NOT Conformant: 1

[Click to download the test reports of failed records](#)

Metadata Services

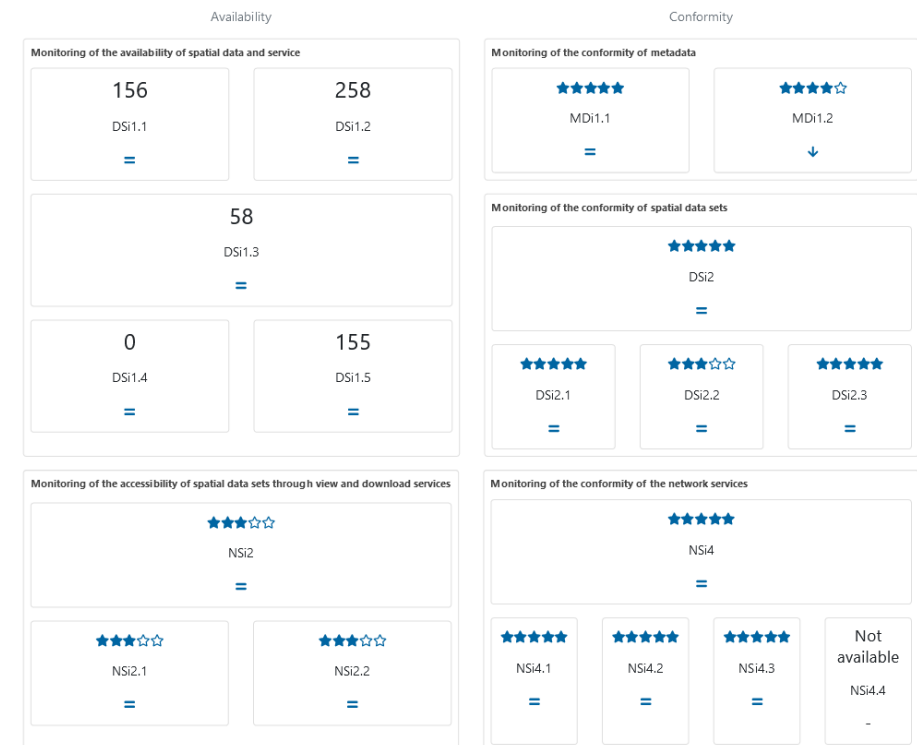
Conformant: 230

NOT Conformant: 28

[Click to download the test reports of failed records](#)

Summary of metadata failing validation in [this endpoint](#) (batch file identifier, metadata identifier, metadata type, total number and ids of failed test assertions)
Summary of metadata failing validation in [all endpoints](#) (see "readme" sheet for details)

Monitoring Indicators 2022



Download the calculated indicators for this country

Monitoring and Reporting 2023 – Dashboard

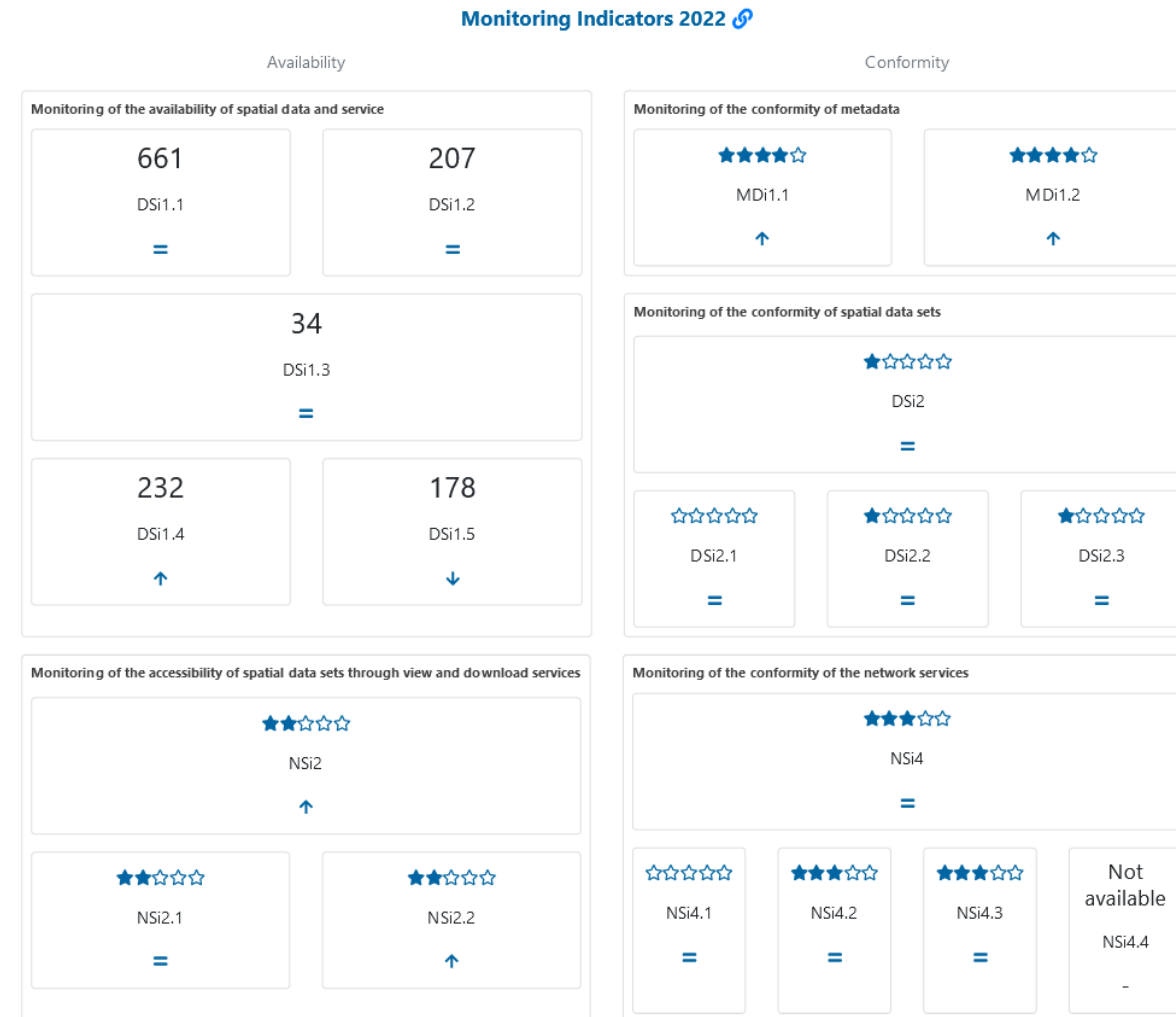
- Visualization of indicators
 - star-based scoring system (for percentage indicators):

- ☆☆☆☆☆ $0 \leq X < 10\%$
- ★☆☆☆☆ $10\% \leq X < 30\%$
- ★★☆☆☆ $30\% \leq X < 50\%$
- ★★★☆☆ $50\% \leq X < 70\%$
- ★★★★☆ $70\% \leq X < 90\%$
- ★★★★★ $90\% \leq X \leq 100\%$

- comparison against 2022 results:

- for relative number indicators:
 - ↑ increase of at least 10%
 - ↓ decrease of at least 10%
 - = increase or decrease of less than 10%
- for absolute number indicators:

same rule but considering 10% of the 2022 values



Monitoring and Reporting 2023 – Dashboard

- Documentation

- ▼ Notes on calculation of MDi1.1 and MDi1.2

The evaluation of these indicators involves a validation of the collected metadata through the [INSPIRE Reference Validator](#) (v2021.3.1).

All metadata records are validated against the Conformance Classes corresponding to the [INSPIRE MD TG v2.0](#):

- ✓ if the recognized INSPIRE Resource Type is "**dataset**" or "**series**", the applied executable test suites are "**Conformance Class 2: INSPIRE data sets and data set series interoperability metadata**" and "**Conformance Class 2b: INSPIRE data sets and data set series metadata for Monitoring**";
- ✓ if the recognized INSPIRE Resource Type is "**service**", the applied executable test suite is:
 - ✓ "Conformance Class 4: INSPIRE Network Services metadata", if the service is a Network Service (service type equal to "view", "download", "discovery" or "transformation")
 - ✓ "Conformance Class 5: INSPIRE Invocable Spatial Data Services metadata", if the service is an Invocable Spatial Data Service (service type equal to "other")

Implementing Decision

Documentation:

Commission Implementing Decision (EU) 2019/1372 of 19 August 2019 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards monitoring and reporting

Technical Report including guidance for the calculation of indicators and description of the Monitoring process (Chapter 2)

Technical Report on M&R

Indicators calculation

explanation of how indicators are calculated

Guidance on indicator visualisation in the dashboard

explanation of indicator visualisation

Information on the software used to calculate the indicators

info on the versions of Geoportal,
M&R Tools & Validator used

Results from the metadata validation

Results of evaluation using [INSPIRE Reference Validator](#)

| Metadata Dataset | |
|--|-------------------|
| Conformant: 141 | NOT Conformant: 6 |
| Click to download the test reports of failed records | |

| Metadata Services | |
|--|--------------------|
| Conformant: 211 | NOT Conformant: 13 |
| Click to download the test reports of failed records | |

Summary of metadata failing validation in [this endpoint](#) (batch file identifier, metadata identifier, metadata type, total number and ids of failed test assertions)

Summary of metadata failing validation in [all endpoints](#) (see "readme" sheet for details)

ZIP files including failed reports in HTML and JSON

Results from the metadata validation

Results of evaluation using [INSPIRE Reference Validator](#)

Metadata Dataset

Conformant: 141

NOT Conformant: 6

[Click to download the test reports of failed records](#)

Metadata Services

Conformant: 211

NOT Conformant: 13

[Click to download the test reports of failed records](#)

Summary of metadata failing validation in [this endpoint](#) (batch file identifier, metadata identifier, metadata type, total number and ids of failed test assertions)

Summary of metadata failing validation in [all endpoints](#) (see "readme" sheet for details)

| | A | B | C | D | E | F |
|----|------------|--------------------------------------|---------|-------------|----------|---|
| 1 | file_id | md_id | type | error_count | errors | |
| 2 | 121-140/1 | 59630bde-6361-4175-8f7b-1791ecfa78cf | dataset | 1 | 1.4 | |
| 3 | 281-300/17 | e02e7c33-818a-463e-a565-3847f2b8cb30 | dataset | 1 | 2.5 | |
| 4 | 341-360/14 | aac1ad8b-4fb3-4bea-803c-64c8a22b33fc | dataset | 1 | C.16 | |
| 5 | 341-360/2 | 326ef9d6-78fb-496e-9215-07ae1d96afec | dataset | 2 | C.1 C.16 | |
| 6 | 361-371/5 | eeeba0a6-0fe8-4be3-8392-39851d3f98c3 | service | 1 | C.16 | |
| 7 | 361-371/8 | f62e9051-5374-4d1d-89db-522f71839a7f | service | 1 | C.16 | |
| 8 | 41-60/6 | 242a54d1-9857-4582-9236-68b69ff8695a | service | 2 | C.1 C.22 | |
| 9 | 281-300/6 | d6892cc7-7c63-4d74-a86e-71a2196f9c16 | service | 2 | C.1 C.22 | |
| 10 | 281-300/12 | d9e282b1-d016-4eaf-b2b6-ad7ce2fe528a | service | 2 | C.1 C.22 | |
| 11 | 341-360/3 | 368e2919-0bfa-43be-89bd-45e91d047cc3 | service | 1 | C.16 | |
| 12 | 321-340/17 | 10d86cd3-93d6-4056-906b-01c9bedcf6f0 | service | 1 | C.16 | |
| 13 | 341-360/9 | 77a3b667-68fd-4250-9b26-8ee62e32046f | service | 1 | C.16 | |
| 14 | 341-360/12 | 8079e314-508c-4b8e-83ae-e56b518db50c | service | 1 | C.16 | |
| 15 | 341-360/5 | 37473a91-068e-4950-a3cd-8bcc0b453ffd | service | 1 | C.16 | |
| 16 | 341-360/8 | 7480a470-c674-46c2-91ee-5f342d967678 | service | 1 | C.16 | |
| 17 | 361-371/3 | e81e37e8-3c68-42cf-9e78-9e70fe4f2209 | dataset | 1 | C.16 | |

Lessons learnt

Monitoring and Reporting 2023 – General conclusions

- Overall, **slight improvement** of results compared to the **2022** exercise.
- **Significantly improved** accessibility
- **Significant improvement** comparing with previous years M&R baselines, increasing from 2022 to **2020**, respectively.
- **Heterogeneity in performance** of the different countries still remains.
- **Concerns about the reliability of** indicators on the **conformity** of datasets and services (self-declarations). Interoperability lacks in XML encoding.
- **Several issues** were identified in the INSPIRE infrastructure during the M&R process, which may turn into opportunities for future improvement.
- **Data-Service Linking Simplification** approach is the way forward!

Conformity of datasets and services

Self-declared conformity

- Many countries (some being the same as in 2022) declared values equal or close to 100% for all the indicators on the conformity of datasets and services.

| country | MDi1.1 | MDi1.2 | DSi2 | DSi2.1 | DSi2.2 | DSi2.3 | NSi2 | NSi2.1 | NSi2.2 | NSi4 | NSi4.1 | NSi4.2 | NSi4.3 | NSi4.4 |
|---------|--------|--------|------|--------|--------|--------|------|--------|--------|------|--------|--------|--------|--------|
| AT | 99% | 99% | 89% | 88% | 87% | 87% | 44% | 52% | 91% | 96% | 100% | 99% | 97% | #N/A |
| BE | 92% | 81% | 75% | 68% | 77% | 74% | 72% | 78% | 88% | 93% | 83% | 94% | 93% | #N/A |
| BG | 28% | 46% | 95% | 98% | 92% | 97% | 27% | 33% | 27% | 0% | 0% | 0% | 0% | #N/A |
| CH | 0% | 0% | 3% | 6% | 2% | 4% | 0% | 60% | 2% | 3% | #N/A | 100% | 0% | #N/A |
| CY | 0% | 0% | 2% | 0% | 25% | 0% | 98% | 98% | 100% | 0% | #N/A | 0% | 0% | #N/A |
| CZ | 90% | 98% | 47% | 57% | 53% | 47% | 92% | 96% | 96% | 97% | 100% | 97% | 97% | 100% |
| DE | 74% | 79% | 61% | 53% | 52% | 53% | 65% | 72% | 67% | 99% | 100% | 99% | 99% | #N/A |
| DK | 59% | 93% | 63% | 100% | 71% | 47% | 52% | 71% | 54% | 91% | 100% | 91% | 91% | #N/A |
| EE | 97% | 96% | 56% | 80% | 58% | 58% | 74% | 77% | 76% | 91% | 100% | 90% | 91% | #N/A |
| EL | 100% | 100% | 100% | 100% | 100% | 100% | 98% | 98% | 100% | 0% | 0% | 0% | 0% | #N/A |
| ES | 92% | 94% | 47% | 63% | 54% | 47% | 84% | 97% | 85% | 96% | 100% | 97% | 92% | #N/A |
| FI | 97% | 100% | 25% | 25% | 23% | 39% | 34% | 55% | 47% | 53% | 100% | 57% | 52% | #N/A |
| FR | 3% | 60% | 77% | 100% | 76% | 74% | 19% | 37% | 60% | 16% | #N/A | 7% | 0% | #N/A |
| HR | 98% | 99% | 59% | 58% | 58% | 59% | 56% | 73% | 62% | 80% | 100% | 65% | 97% | #N/A |
| HU | 42% | 97% | 70% | 68% | 85% | 73% | 51% | 57% | 63% | 45% | 0% | 91% | 3% | #N/A |
| IE | 98% | 4% | 36% | 79% | 37% | 37% | 65% | 65% | 75% | 96% | 100% | 100% | 100% | #N/A |
| IS | 87% | 77% | 50% | 54% | 51% | 51% | 50% | 78% | 55% | 0% | #N/A | 0% | 0% | #N/A |
| IT | 99% | 96% | 24% | 22% | 21% | 22% | 26% | 50% | 34% | 5% | 14% | 6% | 3% | 0% |
| LI | 77% | 25% | 7% | 7% | 8% | 3% | 0% | 1% | 0% | 25% | #N/A | 100% | 0% | #N/A |
| LT | 96% | 100% | 79% | 55% | 79% | 79% | 61% | 63% | 98% | 100% | 100% | 100% | 100% | #N/A |
| LU | 100% | 100% | 75% | 100% | 75% | 75% | 0% | 91% | 0% | 100% | 100% | 100% | 100% | #N/A |
| LV | 0% | 0% | 77% | 83% | 55% | 81% | 56% | 60% | 58% | 0% | #N/A | 0% | 0% | #N/A |
| MT | 100% | 100% | 99% | 99% | 99% | 99% | 80% | 98% | 85% | 100% | #N/A | 100% | 100% | #N/A |
| NL | 75% | 98% | 42% | 91% | 88% | 82% | 59% | 69% | 64% | 76% | 0% | 93% | 93% | #N/A |
| NO | 86% | 74% | 6% | 14% | 7% | 1% | 14% | 19% | 41% | 3% | 0% | 5% | 1% | #N/A |
| PL | 97% | 91% | 81% | 76% | 93% | 79% | 60% | 65% | 65% | 97% | 100% | 96% | 99% | #N/A |
| PT | 73% | 88% | 46% | 52% | 34% | 44% | 43% | 67% | 60% | 65% | #N/A | 73% | 54% | #N/A |
| RO | 57% | 95% | 45% | 100% | 33% | 100% | 38% | 38% | 39% | 91% | 100% | 98% | 93% | #N/A |
| SE | 84% | 92% | 100% | 100% | 100% | 100% | 83% | 87% | 88% | 100% | 100% | 100% | 100% | #N/A |
| SI | 77% | 91% | 81% | 100% | 53% | 44% | 46% | 67% | 52% | 100% | #N/A | 100% | 100% | #N/A |
| SK | 99% | 92% | 66% | 59% | 85% | 59% | 85% | 91% | 87% | 61% | #N/A | 65% | 63% | #N/A |

Conformity of datasets and services

Self-declared conformity

- A random, **manual QC of conformity** was performed on a small sample of datasets and services from these countries using the INSPIRE Reference Validator.
 - The overall result of the JRC manual conformity check was very low:
 - between 10% and 20%!
 - Despite no conclusions could be derived, we proved that the calculated values for the conformity indicators are not reliable:
 - **Conformity of spatial data sets**: DSi1.1, DSi1.2, DSi1.3, DSi1.4, DSi1.5
 - **Conformity of network services**: NSi4, NSi4.1, NSi4.2, NSi4.3, NSi4.4
 - The INSPIRE Reference Validator was probably not used to check the conformity in many cases.

Opportunities for improvement

Metadata records from national catalogues with indexing errors or warnings

- Metadata records with XML (ISO 19139) encoding errors, not properly indexed by GeoNetwork.

The screenshot displays the 'INSPIRE Geoportal - Internal' status page. On the left, a sidebar contains navigation options: Status, Record links analysis, Information, Versioning, Last user feedbacks, and a bottom section with icons for home, search, and settings. The main content area is divided into two columns. The left column, titled 'Critical System Checks', shows 'CSW GetCapabilities operation' (OK), 'Database Connection' (OK), and 'Remote index' (OK). Below this is a 'Non-critical System Checks' section with 'Dashboard application' (ERROR), 'Dead locked threads' (OK), 'Sufficient free file handles' (OK), 'Available connections in database' (OK), 'No harvesting errors' (OK), 'Index is in readonly mode' (OK), 'Metadata index errors' (ERROR), and 'Records in index/db = 318339/318341' (ERROR). The right column, titled 'Metadata with indexing errors', features a filter section with 'Error types' (Errors (31), Warning (12940)), 'Harvested' (Harvested (12970)), and 'Indexing errors' (IndexingErrorMsg-GNIDX-XSL|A sequence of more than one item is not allowed as the first... (30), ElasticsearchException[Elasticsearch exception [type=mapper_parsing_exception, reason=f... (1)). Below these are 'Indexing warnings' with various messages and counts, such as 'Warning / Field resourceTemporalDateRange / Lower and upper bounds empty or not v... (2776)'. A red box highlights the 'Indexing errors' and 'Indexing warnings' sections.

→ Consequences:

- a) Metadata records not available in the INSPIRE Geoportal (not processed by Elastic Search).
- b) Decrease in indicators.

Opportunities for improvement

Non-INSPIRE metadata records present in national catalogues

- Example metadata records coming within standard GeoNetwork installations.
- Metadata records with `<gmd:hierarchyLevel>` different from dataset / service.

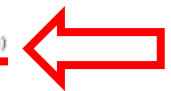
The screenshot shows a metadata record with the following details:

- Title:** Geoscience Australia's Open Day Photographs 26th August 2007 (highlighted with a red box)
- Description:** During National Science Week on Sunday 26th August 2007, Geoscience Australia opened its doors to the community to showcase a diverse range of work activities. Members of the public had the opportunity to discover how earthquakes are detected, pan for gold, tour the building, view Australia in 3D, become a seafloor detective and talk to the people who work for Australia's national geoscience research organisation. The photographs of that open day have been converted into thumbnail images and are available on the GA web site.
- Access and use constraints:** The images are only available in thumbnail size for privacy reasons.
- Technical information:** Revision 25-08-2007 23:00, Language English

Type of resources ▼



Dataset (170)
Service (41)
collectionSession (3)



Type of resources ▼

Dataset (173)
 Service (41)
 Collection session (3)

→ Consequences:

- a) Non-INSPIRE metadata records harvested by the INSPIRE Geoportal.
- b) Possible decrease in indicators.

Opportunities for improvement

Conformity of datasets and/or services non properly declared

Example:

- Incorrect use of elements to declare the conformity using `<DQ_DomainConsistency>` report.

```
<gmd:report>
  <gmd:DQ_DomainConsistency xsi:type="gmd:DQ_DomainConsistency_Type">
    <gmd:result>
      <gmd:DQ_ConformanceResult xsi:type="gmd:DQ_ConformanceResult_Type">
        <gmd:specification>
          <gmd:CI_Citation>
            <gmd:title xsi:type="gmd:PT_FreeText_PropertyType">
              <gmx:Anchor xlink:href="http://data.europa.eu/eli/reg/2010/1089">&#x39A;&#x391;&#x391;&#x39D;&#x39F;&#x39D;&#x399;&#x3A3;&#x39C;&#x39F;&#x3A3;&#x395;&#x395;&#x3B1;&#x3C1;&#x3B9;&#x3B8;. 976/2009 &#x3A4;&#x397;&#x3A3;&#x395;&#x3A0;&#x399;&#x3A4;&#x3A1;&#x39F;&#x3A0;&#x397;&#x3A3;&#x3C4;&#x3B7;&#x3C2; 19&#x3B7;&#x3C2;
&#x39F;&#x3BA;&#x3C4;&#x3C9;&#x3B2;&#x3C1;&#x3AF;&#x3BF;&#x3C5; 2010 &#x3C3;&#x3C7;&#x3B5;&#x3C4;&#x3B9;&#x3BA;&#x3AC; &#x3BC;&#x3B5; &#x3C4;&#x3B7;&#x3BD;
&#x3B5;&#x3C6;&#x3B1;&#x3C1;&#x3BC;&#x3BF;&#x3B3;&#x3AE; &#x3C4;&#x3B7;&#x3C2; &#x3BF;&#x3B4;&#x3B7;&#x3B3;&#x3AF;&#x3B1;&#x3C2; 2007/2/&#x395;&#x39A; &#x3C4;&#x3BF;&#x3C5;
&#x395;&#x3C5;&#x3C1;&#x3C9;&#x3C0;&#x3B1;&#x3CA;&#x3BA;&#x3BF;&#x3CD; &#x39A;&#x3BF;&#x3B9;&#x3BD;&#x3BF;&#x3B2;&#x3BF;&#x3C5;&#x3BB;&#x3AF;&#x3BF;&#x3C5;
&#x3BA;&#x3B1;&#x3B9; &#x3C4;&#x3BF;&#x3C5; &#x3A3;&#x3C5;&#x3BC;&#x3B2;&#x3BF;&#x3C5;&#x3BB;&#x3AF;&#x3BF;&#x3C5; &#x3CC;&#x3C3;&#x3BF;&#x3BD;
&#x3B1;&#x3C6;&#x3BF;&#x3C1;&#x3AC; &#x3C4;&#x3B9;&#x3C2; &#x3B4;&#x3B9;&#x3BA;&#x3C4;&#x3C5;&#x3B1;&#x3BA;&#x3AD;&#x3C2;
&#x3C5;&#x3C0;&#x3B7;&#x3C1;&#x3B5;&#x3C3;&#x3AF;&#x3B5;&#x3C2;</gmx:Anchor>
            <gmd:PT_FreeText>
              <gmd:LocalisedCharacterString locale="#_...">&#x39A;&#x391;&#x391;&#x39D;&#x39F;&#x39D;&#x399;&#x3A3;&#x39C;&#x39F;&#x3A3;&#x395;&#x395;&#x3B1;&#x3C1;&#x3B9;&#x3B8;. 976/2009
&#x3A4;&#x397;&#x3A3;&#x395;&#x3A0;&#x399;&#x3A4;&#x3A1;&#x39F;&#x3A0;&#x397;&#x3A3;&#x3C4;&#x3B7;&#x3C2; 19&#x3B7;&#x3C2;
&#x39F;&#x3BA;&#x3C4;&#x3C9;&#x3B2;&#x3C1;&#x3AF;&#x3BF;&#x3C5; 2010 &#x3C3;&#x3C7;&#x3B5;&#x3C4;&#x3B9;&#x3BA;&#x3AC; &#x3BC;&#x3B5; &#x3C4;&#x3B7;&#x3BD;
&#x3B5;&#x3C6;&#x3B1;&#x3C1;&#x3BC;&#x3BF;&#x3B3;&#x3AE; &#x3C4;&#x3B7;&#x3C2; &#x3BF;&#x3B4;&#x3B7;&#x3B3;&#x3AF;&#x3B1;&#x3C2; 2007/2/&#x395;&#x39A;
&#x3C4;&#x3BF;&#x3C5; &#x395;&#x3C5;&#x3C1;&#x3C9;&#x3C0;&#x3B1;&#x3CA;&#x3BA;&#x3BF;&#x3CD; &#x39A;&#x3BF;&#x3B9;&#x3BD;&#x3BF;&#x3B2;&#x3BF;&#x3C5;&#x3BB;&#x3AF;&#x3BF;&#x3C5;
&#x3BA;&#x3B1;&#x3B9; &#x3C4;&#x3BF;&#x3C5; &#x3A3;&#x3C5;&#x3BC;&#x3B2;&#x3BF;&#x3C5;&#x3BB;&#x3AF;&#x3BF;&#x3C5; &#x3CC;&#x3C3;&#x3BF;&#x3BD;
&#x3B1;&#x3C6;&#x3BF;&#x3C1;&#x3AC; &#x3C4;&#x3B9;&#x3C2; &#x3B4;&#x3B9;&#x3BA;&#x3C4;&#x3C5;&#x3B1;&#x3BA;&#x3AD;&#x3C2;</gmd:LocalisedCharacterString>
            </gmd:textGroup>
          </gmd:PT_FreeText>
        </gmd:title>
        <gmd:date>
          <gmd:CI_Date>
            <gmd:date>
              <gco:Date>2009-10-20</gco:Date>
            </gmd:date>
          </gmd:CI_Date>
        </gmd:date>
      </gmd:DQ_ConformanceResult>
    </gmd:result>
  </gmd:DQ_DomainConsistency>
</gmd:report>
```

→ Consequences: Non-representative indicators on conformity.

Opportunities for improvement

Declaration of GEMET INSPIRE Theme keywords

- Not following, apart from Requirements on this concern, the whole set of Recommendations.
- Example (best use):

```
/gmd:MD_Metadata/gmd:identificationInfo/*/gmd:descriptiveKeywords/gmd:MD_Keywords:
<gmd:MD_Keywords>
  <gmd:keyword>
    <gmx:Anchor xlink:href="http://inspire.ec.europa.eu/theme/ac">
      Atmospheric conditions
    </gmx:Anchor>
  </gmd:keyword>
  <gmd:keyword>
    <gmx:Anchor xlink:href="http://inspire.ec.europa.eu/theme/mf">Meteorological geographical features</gmx:Anchor>
  </gmd:keyword>
  <gmd:thesaurusName>
    <gmd:CI_Citation>
      <gmd:title>
        <gmx:Anchor xlink:href="http://www.eionet.europa.eu/gemet/inspire_themes">GEMET - INSPIRE themes, version 1.0</gmx:Anchor>
      </gmd:title>
      <gmd:date>
        <gmd:CI_Date>
          <gmd:date>
            <gco:date>2008-06-01</gco:date>
          </gmd:date>
          <gmd:dateType>
            <gmd:CI_DateTypeCode codeList="http://standards.iso.org/iso/19139/resources/gmxCodeLists.xml#CI_DateTypeCode">
            </gmd:CI_DateTypeCode>
          </gmd:dateType>
        </gmd:CI_Date>
      </gmd:date>
    </gmd:CI_Citation>
  </gmd:thesaurusName>
</gmd:MD_Keywords>
```

→ Consequences: Difficulties to filter dataset metadata records by theme / INSPIRE Annex.
Non-representativeness of dataset conformity indicator.

Opportunities for improvement

Problems preventing dataset accessibility through network services

Examples:

- Service timeouts. Requirements on Quality of Service (QoS) not assured.

```
HTTPSConnectionPool(host='gis.nst.dk', port=443): Read timed out. (read timeout=5)
```

- Misconfiguration of services. SSL certificate errors.

```
(Caused by SSLError(SSLCertVerificationError(1, '[SSL: CERTIFICATE_VERIFY_FAILED] certificate verify failed: self-signed certificate in certificate chain (_ssl.c:1006)')))
```

→ Consequences: Decreased indicators on accessibility through view / download services.

Good practices identified

Greece (EL), Luxembourg (LU), Malta (MT)

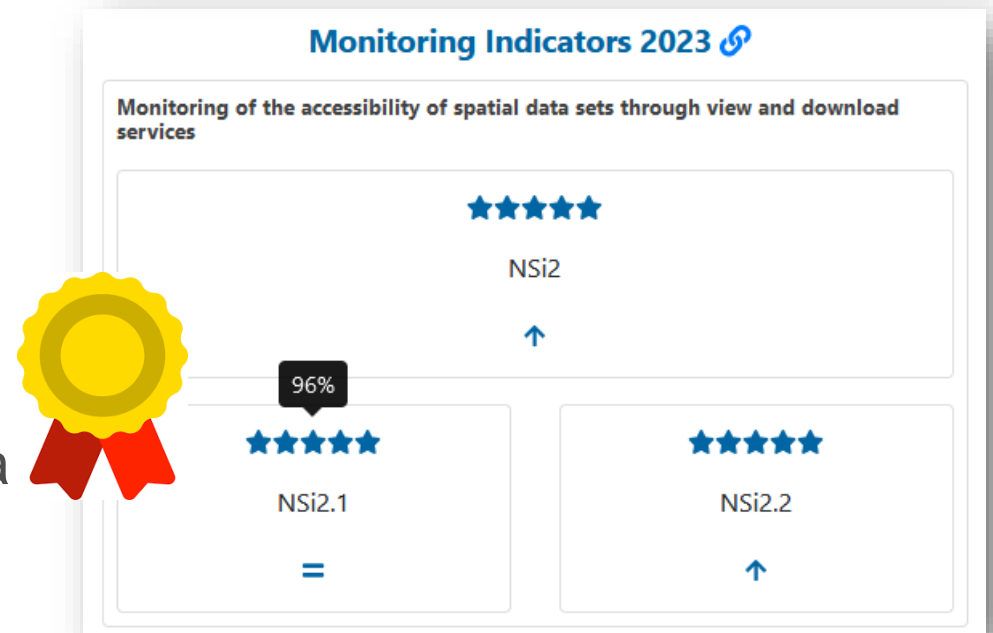
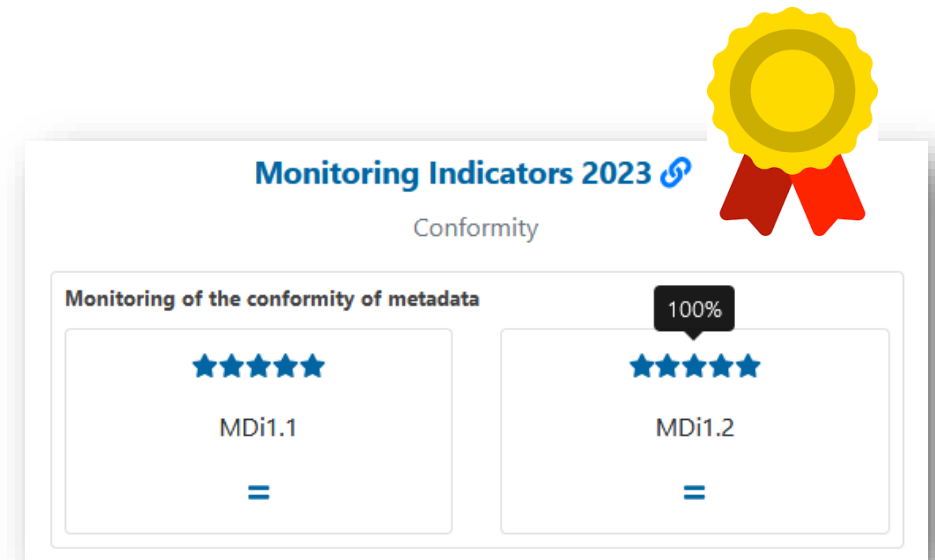
- 100% Conformity of INSPIRE metadata.

Other countries effectively using the INSPIRE Reference Validator (datasets)

- Some countries with dataset metadata conformity near to 100%: AT, EE, FI, HR, IT, LT, PL, SK.

Overall improvement of M&R indicators (2023 vs. 2022)

- Belgium (BE), Germany (DE), Estonia (EE), Croatia (HR), Lithuania (LT), Malta (MT), Poland (PL), Sweden (SE), Slovakia (SK).



Good practices identified

Slovakia (SK)

- Exercise performed with national data providers to assure accessibility of URLs:
 - Specific Link-Checker project: <https://gitlab.com/mzpsr/geocloud/applications/sdi-linkage-checker>
 - Positive impact on accessibility indicators.
 - Active and continuous feedback to JRC Team for enhancing the INSPIRE Geoportal.
- Proactive attitude and continuous feedback to the INSPIRE Geoportal team (e.g. issues detected, potential solutions, active participation in GitHub helpdesks).

Thank you!



JRC-INSPIRE-SUPPORT@ec.europa.eu

© European Union 2023

Unless otherwise noted the reuse of this presentation is authorised under the [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/) license. For any use or reproduction of elements that are not owned by the EU, permission may need to be sought directly from the respective right holders.

