



Republic of Moldova

GOVERNMENT

DECISION No. 737
from 15-09-2017

on approval of Regulation with regard to the norms for creating network services and deadline for their implementation

Published: 22-09-2017 in the Official Gazette No. 340-351 Art. 842

AMENDED

GD12 from 11.01.23, MO65-68/01.03.23 art.123; in force as of 01.04.23

This decision transposes Commission Regulation (EC) no. 976/2009 of 19 October 2009 implementing Directive 2007/2/EC of the European Parliament and of the Council with regard to network services, published in the Official Journal of the Union L274 of 20 October 2009, as last amended by Regulation (EU) no. 1088/2010 of November 23, 2010.

[This harmonization clause was introduced through GD12 from 11.01.23, MO65-68/01.03.23 art.123; in force as of 01.04.23]

Based on Article 9 paragraph (5) from Law no. 254 from 17 November 2016 on national spatial data infrastructure (Official Gazette of the Republic of Moldova, 2016, no. 441-451, Article 887), the Government DECIDES:

1. To approve the Regulation on norms for creating network services and deadline for their implementation (it is attached).

2. Since the entry into effect of the present Regulation, public entities shall create network services as follows:

1) discovery/search services and view services – within 7 years;

[Art. 2 parag.(1) in edition of GD12 from 11.01.23, MO65-68/01.03.23 art.123; in force as of 01.04.23]

2) download services and transformation services – within 10 years.

[Art.2 parag.(2) amended through GD12 from 11.01.23, MO65-68/01.03.23 art.123; in force as of 01.04.23]

PRIME-MINISTER

Pavel FILIP

**Countersign:
Deputy Prime-Minister,
Minister of Economy
and Infrastructure**

Octavian Calmîc

No. 737. Chisinau, 15 September 2017.

Approved
through Government Decision no. 737
from 15 September 2017

REGULATION
with regard to norms for creating network services
and deadline for their implementation

I. GENERAL PROVISIONS

1. The Regulation with regard to the norms for creating network services and deadline for their implementation (hereinafter referred to as *Regulation*) aims to create and implement network services mentioned at Article 9 paragraph (1) of the Law no. 254 from 17 November 2016 on national spatial data infrastructure.

2. This Regulation is obligatory for all public entities according to Government Decision no. 458 from 22 June 2017 „on approval of responsibilities of public entities for spatial data sets”.

3. In the meaning of this Regulation, the following notions shall apply:

capacity - means limit of the number of simultaneous service requests provided with guaranteed performance;

performance - means the minimal level by which an objective is considered to be attained representing the fact how fast a request can be completed within a Network Service;

normal circumstances – periods out of peak load, set at 90% of the total working time of the network service;

availability - means probability that the Network Service is available;

response time - means the time necessary for the service operation to return the first byte of the result;

service request - means a request to a single operation of a Network Service;

publish - means the operation to insert, delete or update metadata elements of resources in the Discovery Service

natural language - means a language that is spoken, written, or signed by humans for general-purpose communication;

collect - means an operation to pull metadata elements of resources from a source Discovery Service and to allow to create, delete or update the metadata of these resources in the target Discovery Service;

layer - means a basic unit of geographic information that may be requested as a map from a server in accordance with EN ISO 19128;

download through direct access – download service which ensures access to spatial objects from the spatial data sets based on inquiry;

network service – service intended to ensure the interaction among computers (applications), based on a set of standard protocols for each type of network service individually;

[Art.3 notion modified through GD12 from 11.01.23, MO65-68/01.03.23 art.123; in force as of 01.04.23]

CSW (Catalog Service for the Web) – catalogue service for Internet which defines the common interfaces for discovery, navigation and inquiry of metadata for spatial data sets and services, and other resources;

WMS (Web Map Service) – standard protocol used for serving, via Internet, the spatial data generated by a server, using the data sets from a spatial database;

WMTS (Web Map Tile Service) - standard protocol used to make georeferenced map tiles prepared in advance and with calculated time duration available on the Internet.

[Art.3 notion introduced through GD12 from 11.01.23, MO65-68/01.03.23 art.123; in force as of 01.04.23]

WFS (Web Feature Service) – standard protocol which allows for making inquiries for geographic features by means of the Internet and providing vector data;

ATOM (Download Service Feed) - international standard for sharing data on the Internet. Atom is an XML-based document format that describes lists of related information known as "feeds". These feeds are composed of a number of items, known as

"records", each of which has an extensible set of elements, containing information about each record;

[Art.3 notion introduced through GD12 from 11.01.23, MO65-68/01.03.23 art.123; in force as of 01.04.23]

OGC API Features (Open Geospatial Consortium – Application Programming Interfaces) - multi-part standard that provides the possibility to create, modify and query spatial data on the web and specifies requirements and recommendations for APIs (application programming interfaces) that wish to follow a standard way of sharing feature data;

[Art.3 notion introduced through GD12 from 11.01.23, MO65-68/01.03.23 art.123; in force as of 01.04.23]

WCS (Web Coverage Service) – web service which allows for the access, provision and taking-over of coverage spatial data or digital representations of spatial and temporal phenomena by means of the Internet;

XML (Extensible Markup Language) – standard meta-language used for the activity of structural Markup of documents and data transfer among applications on the Internet;

RIF (Rule Interchange Format) – standard format meant to ensure mutual exchange, interoperability and interaction of systems;

GML (Geography Markup Language) – XML language meant to express geographic features, serving as language for modelling geographic systems and exchange format for the transfer of spatial data in the Internet;

SOAP (Simple Object Access Protocol) – standard protocol based on XML intended for structured data exchange by means of network services;

WSDL (Web Service Definition Language) – XML language meant to describe the functionality provided by network services;

WS-Addressing (Web Services Addressing) – specification allowing for the interaction and information exchange among network services, offering an addressing mechanism independent of the transport channel;

SM EN ISO – standard issued by International Standardisation Organisation and approved for use in Republic of Moldova.

4. The norms for sharing network services, allowing the public entities and third parties to access them, to exchange and use the respective services for meeting the public needs, are regulated by Article 13 paragraph (3) of the Law no. 254 from 17 November 2016 on national spatial data infrastructure.

5. The tariffs for network services shall be established in accordance with Article 12 paragraph (3) of the Law no. 254 from 17 November 2016 on national spatial data infrastructure.

II. OBLIGATIONS TO CREATE AND ESTABLISH NETWORK SERVICES

6. Public entities are obliged to establish network services following Article 9 paragraph (1) of the Law no. 254 from 17 November 2016 on national spatial data infrastructure, complying with the deadline for network services implementation indicated in this Regulation, and to ensure the availability of such services.

7. Network services are created by the public entities according to the needs of users, ensuring an easy use and access via the Internet or any other electronic communication means.

8. The coordinating authority shall establish discovery/search services, using available international standards, such as CSW in order to ensure the identification of spatial data sets and services based on metadata content and to display their content.

[Art.8 in edition of GD12 from 11.01.23, MO65-68/01.03.23 art.123; in force as of 01.04.23]

9. Public entities shall create view services by using available international standards, such as WMS and WMTS in order to enable the sharing and use of spatial data

sets by public entities and third parties, as well as for the purpose of publishing spatial data sets through the national geoportal.

[Art.9 amended through GD12 from 11.01.23, MO65-68/01.03.23 art.123; in force as of 01.04.23]

10. Public entities shall create download services by using available international standards, such as WFS, WCS, ATOM, OGC API Features, for the purpose of sharing and use of spatial data sets by public entities and third parties.

[Art.10 in edition of GD 12 from 11.01.23, MO65-68/01.03.23 art.123; in force as of 01.04.23]

11. Public entities shall create transformation services by using standard technologies for network services SOAP, defined by WSDL and WS-Addressing specification, using the RIF format for definitions of compliance with transformation schemes, XML language for configuration elements and GML language for scheme-source of transformation.

12. While creating transformation services, public entities will be able to combine them with other services mentioned at points 8-10, in order to ensure the interoperability of network services.

13. For network services, both existing and newly-created, the public entities shall create and update metadata according to the norms mentioned in Article 7 paragraph (2) of the Law no. 254 from 17 November 2016 on national spatial data infrastructure.

14. The coordinating authority of national spatial data infrastructure shall ensure the discovery/search and access to network services mentioned at Article 9 paragraph (1) letters a) and b) of the Law no. 254 from 17 November on national spatial data infrastructure by means of the national geoportal it holds and perform the testing and monitoring of concerned services.

15. The third parties intending to contribute with spatial data sets and services to the national spatial data infrastructure shall comply with the provisions of this Regulation.

III. REQUIREMENTS FAȚĂ DE SERVICIILE DE REȚEA

16. The requirements for the quality of network services, mentioned at Article 9 paragraph (1) of the Law no. 254 from 17 November on national spatial data infrastructure are defined in annex no. 1 to this Regulation.

17. The requirements and specific features applicable for discovery/search services are set in annex no. 2 to this Regulation.

18. The requirements and specific features applicable for view services are set in annex no. 3 to this Regulation.

19. The requirements and specific features applicable for download services are set in annex no. 4 to this Regulation.

20. The requirements and specific features applicable for transformation services are set in annex no. 5 to this Regulation.

Requirements for the quality of network services

Public entities must ensure the quality criteria of network services related to performance, capacity and availability, described further on.

1. Performance

1) The response time for sending the initial response to a discovery/search service shall be maximum 3 seconds in normal situation. For a 470 Kilobytes image (e.g. 800×600 pixels with a colour depth of 8 bits), the response time for sending the initial response to a Get Map Request to a view service shall be maximum 5 seconds in normal situation.

2) For the operation *Get Download Service Metadata*, the response time for sending the initial response must be maximum 10 seconds in normal situation.

3) For the operations *Get Spatial Data Set* and *Get Spatial Object*, as well as for an inquiry concerning exclusively a geographic bounding box, the response time must be maximum 30 seconds in normal situation and, also in normal situation, the download service must maintain a constant response bigger than 0.5 megabytes per second or bigger than 500 spatial objects per second.

4) For the operation *Describe Spatial Data Set* and operations such as *Describe Spatial Object*, the response time must be maximum 10 seconds in normal situation and, also in normal situation, the download service must maintain a constant response bigger than 0.5 megabytes per second or bigger than 500 descriptions of spatial objects per second.

2. Capacity and availability

1) The minimum number of served simultaneous requests to a discovery/search service, according to the performance quality of service, shall be 30 per second.

2) The minimum number of served simultaneous requests to a view service, according to the performance quality of service, shall be 20 per second.

3) The minimum number of served simultaneous requests to a download service, according to the performance quality of service, shall be 10 per second. The number of requests processed in parallel can be limited to 50.

4) The minimum number of served simultaneous requests to a transformation service, according to the performance quality of service, shall be 5 per second.

5) The probability of a network service to be available shall be 99% of the total working time of network service.

Specific requirements and features applicable for discovery/search services

1. Search criteria

1) In order to be compliant with the minimum set of discovery/search criteria set out in Article 10 of the Law no. 254 from 17 November 2016 on national spatial data infrastructure, the discovery/search service shall support searching by using metadata elements included in table 1 of this annex.

Table 1

Minimum search criteria	Metadata elements
Keywords	Keyword
Classification of spatial data and services (For spatial data sets and spatial data set series)	Topic category
Classification of spatial data and services (For spatial data services)	Spatial data service type
The quality and validity of spatial data sets	Lineage
The quality and validity of spatial data sets	Spatial resolution
Degree of conformity with the norms for application, established by the coordinating authority, which set technical modalities to ensure interoperability and harmonisation of spatial data sets and services, being intended for modifying non-essential elements	Specification
Degree of conformity with the norms for application, established by the coordinating authority, which set technical modalities to ensure interoperability and harmonisation of spatial data sets and services, being intended for modifying non-essential elements	Degree
Geographical location	Geographic bounding box
Conditions applying to the access to and use of spatial data sets and services	Conditions applying to access and use
Conditions applying to the access to and use of spatial data sets and services	Limitations on public access
The public entities responsible for the establishment, management, maintenance and distribution of spatial data sets and services	Responsible party
The public entities responsible for the establishment, management, maintenance and distribution of spatial data sets and services	Role of responsible party

2) The following INSPIRE metadata elements or set of elements shall be also available as search criteria:

- a) Resource title;
 - b) Resource abstract;
 - c) Resource type;
 - d) Unique resource identifier;
 - e) Temporal reference.
- 3) To allow for discovering resources through a combination of search criteria, logical and comparison operators shall be supported.
- 4) To allow for discovering resources based on the geographic location of the resource, the spatial operators listed in Table 2 shall be supported.

Table 2

Operator name	Property
Intersects	Requires the <i>geographic bounding box</i> metadata element to intersect a defined area of interest

2. List of operations

- 1) The discovery/search service shall provide the operations listed in Table 3 of this Annex.

Table 3

Operation	Role
Get Discovery Service Metadata	Provides all necessary information about the service and describes service capabilities
Discover Metadata	The Discover Metadata operation allows requesting metadata elements of resources based on a query statement to be retrieved from the target Discovery Service

- 2) The discovery/search service shall support the operations listed in Table 4.

Table 4

Operation	Role
Publish Metadata	The Publish Metadata operation allows editing metadata elements of resources in the Discovery Service (push or pull metadata mechanisms). Editing meaning insert, update and delete
Link Discovery Service	The Link Discovery Service function allows the declaration of the availability of a Discovery Service for the discovery of resources through the network service, while maintaining the resource metadata at the owner location

3. Operation *Get Discovery Service Metadata*

- 1) The parameter of *Get Discovery Service Metadata* request indicates the natural language for the content of response to this request.
- 2) The response to *Get Discovery Service Metadata* request shall contain the following series of parameters:
- a) Discovery Service metadata. The Discovery Service Metadata parameters shall at least contain the metadata elements of the Discovery Service set according to the norms of application

mentioned in Article 7 paragraph (2) of the Law no. 254 from 17 November 2016 on the national spatial data infrastructure;

b) Operations metadata. The parameters of the operations metadata provides metadata about the operations performed by the Discovery service. These metadata parameters describe each operation. They perform, at least, the indication for the operation *Publish metadata*, if the Pull Mechanism, the Push Mechanism or both are available, and the description of each operation, including as a minimum a description of the data exchanged and the network address;

c) Languages. Two language parameters shall be provided – the Response Language parameter indicating the natural language used in the *Get Discovery Service Metadata* Response parameters and the Supported Languages parameter containing the list of the natural languages supported by the Discovery Service.

4. Operation *Discover metadata*

1) The request *Discover metadata* contains the following parameters:

a) The Language parameter indicates the natural language requested for the content of the *Discover Metadata* Response;

b) Query. The Query parameter shall contain the combination of search criteria as specified in point 1 from this annex.

2) Response to the *Discover Metadata* request. The *Discover Metadata* Response parameter shall contain at least the metadata elements of each resource matching the query.

5. Operation *Publish metadata*

The function *Publish metadata* enables the publication of the metadata elements of resources at the Discovery Service. There are two possibilities, of which at least one should be supported:

a) Push Mechanism: allowing editing of the metadata elements of resources accessible from the Discovery Service. The *Edit Metadata* Request parameter provides all information requested for metadata elements of resources to be inserted, updated or deleted at the Discovery Service;

b) Pull Mechanism: allows the Discovery Service to pull metadata elements of resources from a remote location. The *Collect Metadata* Request parameter provides all information about the remote location required to retrieve the available metadata of resources. It shall include as a minimum the metadata elements of the dedicated spatial data service.

6. Operation *Link Discovery Service Operation*

1) The *Link Discovery Service* operation allows the declaration of the availability of a Discovery Service compliant with this Regulation, for the discovery of resources through the network service while maintaining the resource metadata at the owner location.

2) The *Link Discovery Service* Request. The parameter of the *Link Discovery Service* Request shall provide all information about the Public Entity's or Third Party's Discovery Service compliant with this Regulation, enabling the Discovery Service to get resources metadata based on a combination of search criteria from the Public Entity's or Third Party's Discovery Service and to collate it with other resources metadata.

Specific requirements and features applicable for view services

1. List of operations

In order to be compliant with the minimum set of discovery/search criteria set out in Article 9 paragraph (1) letter b) of the Law no. 254 from 17 November 2016 on national spatial data infrastructure, the view service shall provide the operations listed in Table 1 in this annex.

Table 1

Operation	Role
Get View Service Metadata or Get Capabilities	Provides all necessary information (metadata about the service, operations, supported parameters and a list of available layers) about the service and describes service capabilities.
Get Map	Provides a map containing the geographic and thematic information coming from available spatial data sets. This map is a geo-referenced image.

The view service will allow for performing the operations listed in table 2 of this annex.

Table 2

Operation	Role
Link View Service	Allows a public entity or a third party to declare a view Service for the viewing of its resources through the network service while maintaining the viewing capability at the public entity or the third party location

2. Operation *Get View Service Metadata*

1) *Get View Service Metadata* Request. The parameter of *Get View Service Metadata* Request indicates the natural language requested for the content of *Get View Service Metadata* Response.

2) *Get View Service Metadata* Response parameters. The response to the *Get View Service Metadata* shall include the following set of parameters:

a) Metadata of the view service. The parameters of view service metadata shall contain at least the metadata elements of the view service established according to the norms of application mentioned in Article 7 paragraph (2) of the Law no. 254 from 17 November 2016 on national spatial data infrastructure;

b) Operations metadata. The parameters of operations metadata describe the view service operations and contain at least a description of the data exchanged and the network address of each operation;

c) Languages. Two language parameters are foreseen – the Response Language parameter, indicating the natural language used in the Get Service Metadata Response, and the Supported Languages parameter, containing the list of natural languages supported by the view service;

d) Layers metadata. The metadata elements listed in Table 3 must be provided for each layer.

Table 3

Metadata elements	Description
Resource title	The title of the layer, used for human communication, for presentation of the layer, e.g. in a menu
Resource abstract	Layer abstract
Keyword	Additional keywords
Geographic bounding box	The minimum bounding rectangle in all supported Coordinate Reference Systems of the area covered by the layer
Unique resource identifier	The Unique Resource Identifier of the resource used to create the layer

3) The layer specific parameters listed in Table 4 shall be provided for each layer.

Table 4

Parameters	Description
Name	Harmonised name of the layer
Coordinate reference system	List of Coordinate Reference Systems in which the layer is available
Styles	List of the rendering styles available for the layer. A style shall be composed of a title and a unique identifier.
URL of legend	Location of the legend for each style, language and dimension pairs
Dimension Pairs	Indicates the supported two dimensional axis pairs for multi-dimensional spatial data sets and spatial data sets series

3. Operation *Get Map*

Get Map Request. The *Get Map* Request parameters listed in Table 5 shall be provided:

Table 5

Parameters	Description
Layers	List of layer names to be included in the map
Styles	List of style to be used for each layer
Coordinate Reference Systems	

	Coordinate Reference System of the map
Bounding box	The 4 corner Coordinate of the two dimensional map for the selected Dimension pair and in the selected Coordinate Reference System
Image width	The map width in pixels
Image height	The map height in pixels
Image format	The output image format
Language	language to be used for the response
Dimension pairs	The two dimensional axis to be used for the map. For example, a geographical dimension and time

4. Operation *Link View Service*

The *Link View Service* parameter shall provide all information about the public entity's or third party's View Service compliant with this regulation, enabling the network service to get a map from public entity's or third party's view service and to collate it with other maps.

5. Other characteristics

The view service shall have the following characteristics:

a) Coordinate reference systems. The layers shall be simultaneously viewed by using a single coordinate reference system, and the view service shall support at least the unique reference systems in the space of spatial information, made of a set of coordinates (x, y, z) or latitude, longitude and altitude, based on a horizontal datum and a vertical one;

b) Image format. The view service must support at least of the following image formats – *Portable Network Graphics* (PNG) format or *Graphics Interchange Format* (GIF) format, without compression.

Specific requirements and characteristics applicable for download services

1. List of download operations

In order to be compliant with Article 9 paragraph (1) letter c) of the Law no. 254 from 17 November 2016 on national spatial data infrastructure, the download service must perform at least the operations listed in table 1 to this annex.

Table 1

Operation	Role
Get Download Service Metadata or Get Capabilities	Provides all necessary information about the service, the available spatial data sets, and describes the service capabilities.
Get Spatial Data Set	Allows the retrieval of a spatial data set.
Describe Spatial Data Set	Provides the description of all the types of Spatial Objects contained in the Spatial Data Set
Link Download Service	Allows the declaration, by a public entity or a third party, of the availability of a download service for downloading spatial data sets or, where practicable, spatial objects, through the network service, while maintaining the downloading capability at the public authority or the third party location.

2. Operation *Get Download Service Metadata*

1) The parameter of *Get Download Service Metadata* request must indicate the natural language to be used for the content of the response to this request.

2) The response to the *Get Download Service Metadata* request must contain the following set of parameters:

a) Download service metadata. The parameters of Download Service Metadata must contain at least the metadata elements of the download service set according to the norms of application mentioned in Article 7 paragraph (2) of the Law no. 254 from 17 November 2016 on national spatial data infrastructure;

b) Operations metadata. The parameters of Operations metadata must provide metadata about the operations performed by the download service. At least one description must be provided for each operation, including minimum a description of the exchange of information and the network address;

c) Languages. Two language parameters shall be provided – the response language parameter indicating the natural language used in the Get Service Metadata response parameters, and the accepted languages parameter, containing the list of the natural languages supported by the Download Service;

d) Spatial data sets metadata. The metadata elements of the available spatial data sets shall be provided. Additionally, for each spatial data set, the list of coordinate reference systems, which are available, shall be provided, defined according to the norms of application mentioned in Article 8 paragraph (3) of the Law no. 254 from 17 November 2016 on national spatial data infrastructure.

3. Operation *Get Spatial Data Set*

- 1) The request *Get Spatial Data Set* shall contain the following parameters:
 - a) Language. The Language parameter shall indicate the natural language requested for the spatial data set;
 - b) Spatial data set identifier. The spatial data set identifier parameter shall contain the unique resource identifier of the spatial data set;
 - c) Coordinate reference system. The coordinate reference system parameter shall contain one of the coordinate reference systems included in the list of available Coordinate Reference Systems referred to in the list of available coordinate reference systems, defined according to the norms of application mentioned in Article 8 paragraph (3) of the Law no. 254 from 17 November 2016 on national spatial data infrastructure.
- 2) Response to the *Get Spatial Data Set* request. The parameter of response to the *Get Spatial Data Set* request must be the spatial data set in the requested language and reference system.

4. Operation *Describe Spatial Data Set*

- 1) The request *Describe de spatial data set* must contain the following parameters:
 - a) Language. The used language parameter shall indicate the natural language requested for describing the type of spatial objects;
 - b) Spatial data set identifier. The spatial data set identifier parameter shall contain the unique resource identifier of the spatial data set.
 - c) The *Describe Spatial Data Set* response parameter shall be the description of the Spatial Objects in the requested Spatial Data Set and in the requested language.

5. Operation *Link Download Service*

- 1) The operation *Link Download Service* allows the declaration of the availability of a Download Service compliant with this Regulation, for the download of resources through the Download Service while maintaining the resources at the owner location.
- 2) *Link Download Service* request. The *Link Download Service* request parameter shall provide all information about the public entity's or third party's download service compliant with this Regulation, enabling the download service to provide access to spatial data sets and, where possible, to spatial objects from the public entity's or third party's download service.

6. List of direct access download operations

Where the download service gives direct access to spatial data sets, it shall provide, in addition to the operations listed in Table 1, the operations listed in Table 2 of this Annex.

Table 2

Operation	Role
Get Spatial Object	Allows the retrieval of Spatial Objects based upon a query.
Describe Spatial Object Type	Provides the description of the specified Spatial Objects types.

7. Operation *Get Spatial Object*

- 1) The request *Get Spatial Object* must include the following parameters:
 - a) Language used. The used language parameter shall indicate the natural language requested for the spatial objects;

b) Spatial data set identifier. The spatial data set identifier parameter shall contain the unique resource identifier of the required spatial data set. Where the parameter is not provided, it shall be assumed that all available spatial data sets have been selected;

c) Coordinate reference system. The coordinate reference system parameter shall contain one of the coordinate reference systems included in the list of available Coordinate Reference Systems referred to in the list of available coordinate reference systems, defined according to the norms of application mentioned in Article 8 paragraph (3) of the Law no. 254 from 17 November 2016 on national spatial data infrastructure;

d) Query. The query parameter shall be composed of the search criteria listed in p. 9 of this annex.

2) The response to *Get Spatial Object* request must include the following parameters:

a) Spatial objects set. The parameter of spatial objects set shall be the set of spatial objects defined according to the norms of application mentioned in Article 8 paragraph (3) of the Law no. 254 from 17 November 2016 on national spatial data infrastructure;

b) Metadata of the spatial objects set. The parameter of spatial objects set metadata shall include at least the metadata elements of the spatial objects set according to the norms of application mentioned in Article 7 paragraph (2) of the Law no. 254 from 17 November 2016 on national spatial data infrastructure.

8. Operation *Describe spatial object type*

1) The request *Describe spatial object type* must contain the following parameters:

a) Language. The used language parameter shall indicate the natural language requested for the description of spatial object type;

b) Spatial object type. The parameter spatial object type must contain a language-neutral name of the spatial object type, defined according to the norms of application mentioned in Article 8 paragraph (3) of the Law no. 254 from 17 November 2016 on national spatial data infrastructure. Where the parameter is not provided, it shall be assumed that all types of spatial objects have been selected.

2) The response to the request *Describe spatial object type*. The parameter of the response to the *Describe spatial object type* request shall be the description of the spatial object type, according to the norms of application mentioned in Article 8 paragraph (3) of the Law no. 254 from 17 November 2016 on national spatial data infrastructure.

9. Search Criteria for the *Get Spatial Object* Operation

1) For the purpose of the *Get Spatial Object* operation of the download service, the following search criteria shall be implemented:

a) Unique resource identifier of the spatial data set;

b) All relevant key attributes and the relationship among spatial objects, defined according to the norms of application mentioned in Article 8 paragraph (3) of the Law no. 254 from 17 November 2016 on national spatial data infrastructure, in particular the unique identifier of the spatial object and the characteristics related to temporal dimension, including the date of updating;

c) Geographic bounding box, expressed in coordinate reference systems defined according to the norms of application mentioned in Article 8 paragraph (3) of the Law no. 254 from 17 November 2016 on national spatial data infrastructure;

d) Topic of spatial data.

2) In order to allow for the discovery/search of spatial objects by using a combination of search criteria, the logical operators and the comparison operations must be accepted.

Specific requirements and characteristics applicable for transformation services

1. List of transformation operations

In order to be compliant with Article 9 paragraph (1) letter d) of the Law no. 254 from 17 November 2016 on national spatial data infrastructure, the transformation service must perform at least the operations listed in table 1 to this annex.

Table 1

Operation	Function
Get Transformation Service Metadata or Get Capabilities	Provides all necessary information about the service and describes the service capabilities, including the supported transformation category, supported transformations, accepted input data types, supported model definition and mapping/description languages.
Transformation	Carries out the actual transformation process.
Link Transformation Service	Allows the declaration of availability of a transformation service for transforming spatial data sets through the network services, while maintaining the transformation capability at the public entity's or the third party's location.

2. Operation *Get transformation service metadata*

1) The parameters of *Get transformation service metadata* request must indicate the natural language for the content of the *Get transformation service metadata* response.

2) The response to the request *Get transformation service metadata* must contain the following set of parameters:

a) Transformation service metadata. The parameter of transformation service metadata must contain at least the elements of transformation service metadata established according to the norms of application mentioned at Article 7 paragraph (2) of the Law on. 254 from 17 November 2016 on national spatial data infrastructure;

b) Metadata of transformation service operations. The parameter of operations shall provide metadata about the operations performed by the transformation service. This must describe each operation, including at least a description of the exchanged data and the network address, as well as list the transformation categories accepted by the transformation operation, the encoding for the input spatial data set accepted by the transformation operation, the data model languages accepted by the transformation operation and the model mapping languages accepted by the transformation operation;

c) the encoding for the input spatial data set accepted by the transformation operation.

3) Parameter of the used language. Two parameters shall be provided:

a) The response language parameter, indicating the natural language used in the response to the request *Get transformation service metadata*;

b) The supported languages parameter, containing the list of natural languages supported by the transformation service.

3. Operation *Transform*

1) The request *Transform* shall contain the following parameters:

a) Input spatial data set. The Input Spatial Data Set parameter shall indicate the Spatial Data Set to be transformed;

b) Source model. The source model parameter must specify the model of the input spatial data set;

d) Target model. The target model parameter must specify the model to which the input spatial data set shall be transformed;

e) Model mapping/description. The parameter of model mapping/description must specify the manner of passing from source model to target model.

2) Response to *Transform* request. The parameter of the response to *Transform* request must contain the spatial data set transformed according to the norms of application mentioned in Article 8 paragraph (3) of the Law no. 254 from 17 November 2016 on national spatial data infrastructure.

4. Operation *Link transformation service*

The parameter of *Link transformation service* request must provide the information regarding the public entity's or third party's transformation service in compliance with this Regulation, enabling the use of the concerned service.